Southern California's Computer Magazine June 22, 1992 • 97 FREE

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—Ed McCracken

Story starts on page 56

OS/2: Still Not Ready For Prime Time?

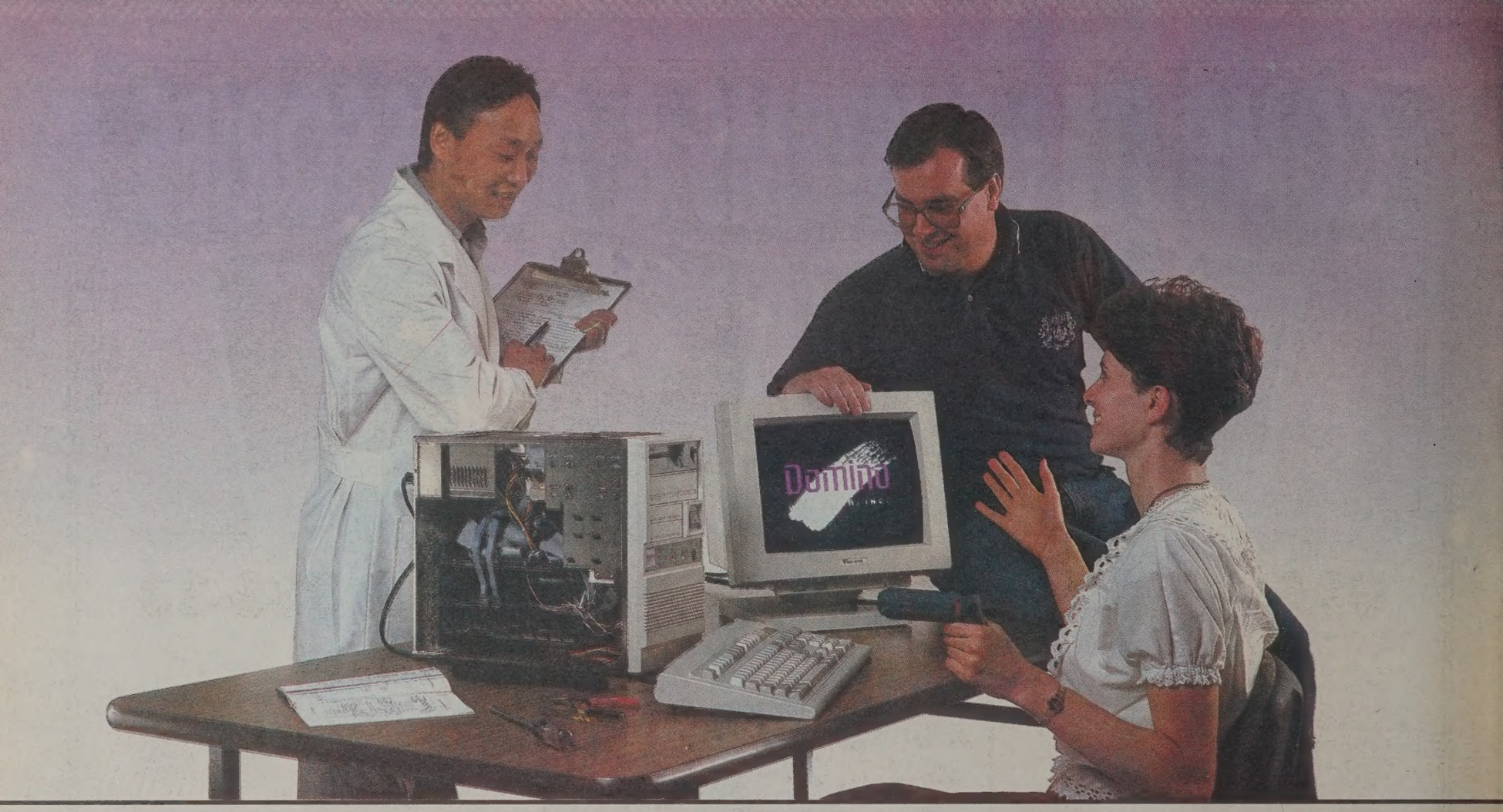
"IBM is treating OS/2 2.0 like a mainframe product: they'll sell it to you, but small users can't get very good service. IBM was primarily thinking about corporate users, who have a computer support and training staff to smooth out the wrinkles."

Story starts on page 70

OS/2: Not Ready For Dvorak?

"IBM has been criticized for its less than stunning marketing in the world of microcomputers. Of course, this is compared to Microsoft, one of the great marketing companies of all time."

Story starts on page 154



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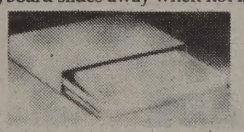

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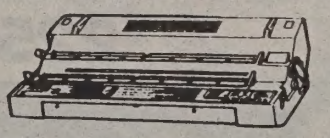

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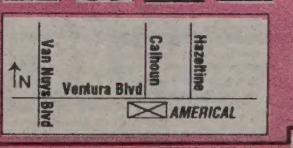

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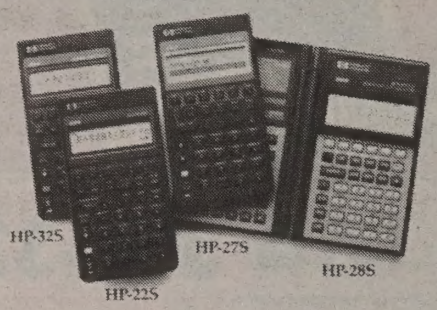

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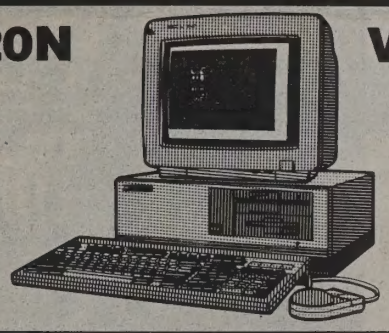

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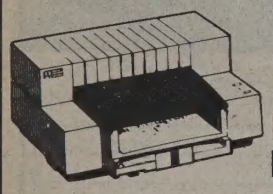

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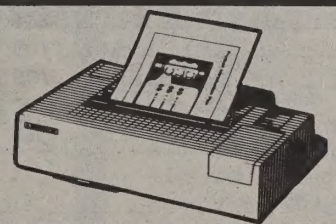

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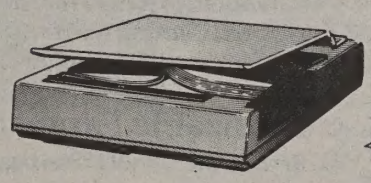

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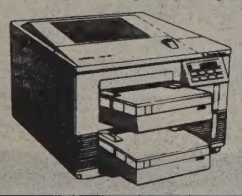

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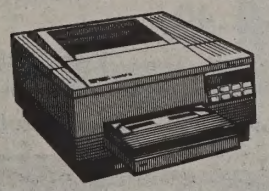

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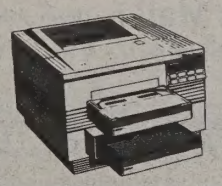

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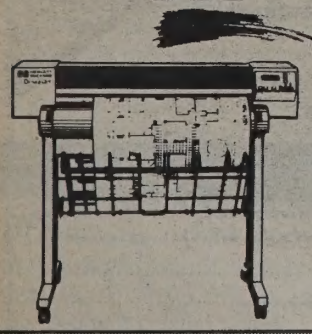

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JUNE 22, 1992 ISSUE #97
MICROTIMES

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A NOTE FROM THE EDITORS

It's not news at this point that the personal computer industry is experiencing some pretty radical paradigm shifts lately. New hardware offering new power and possibilities, and new software just arriving to take advantage of it.

And, of course, new operating environments. It remains to be seen which of the contenders—Windows NT, Sun's Solaris, Apple/IBM's Taligent, IBM's OS/2, or some operating system yet unimagined—will prevail in the impending standards wars and shape what we all do with our computers in the decade to come.

Over at Silicon Graphics, they've been preparing for these changes, and in our cover story starting on page 56, president and CEO Ed McCracken offers some insight as to what it all means.

—ME

COVER STORY

Silicon Graphics Paints The World Indigo *By Mary Eisenhart* 56

Cover and contents photos: Michael Jay

When we visited Silicon Graphics for the first time three years ago, it was the uncontested leader in various niche markets that required state-of-the-art 3-D graphics workstations. The Iris Indigo, launched last year, is the first salvo in SGI's campaign to take over a lot of Mac and PC desktops in the next decade. President and CEO Ed McCracken explains.

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Last month Dvorak talked to the devil. This month he talks to IBM. Coincidence? Perhaps...

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Seemingly aimed more at the MIS director than the individual user, IBM's operating system still hasn't quite realized its potential.

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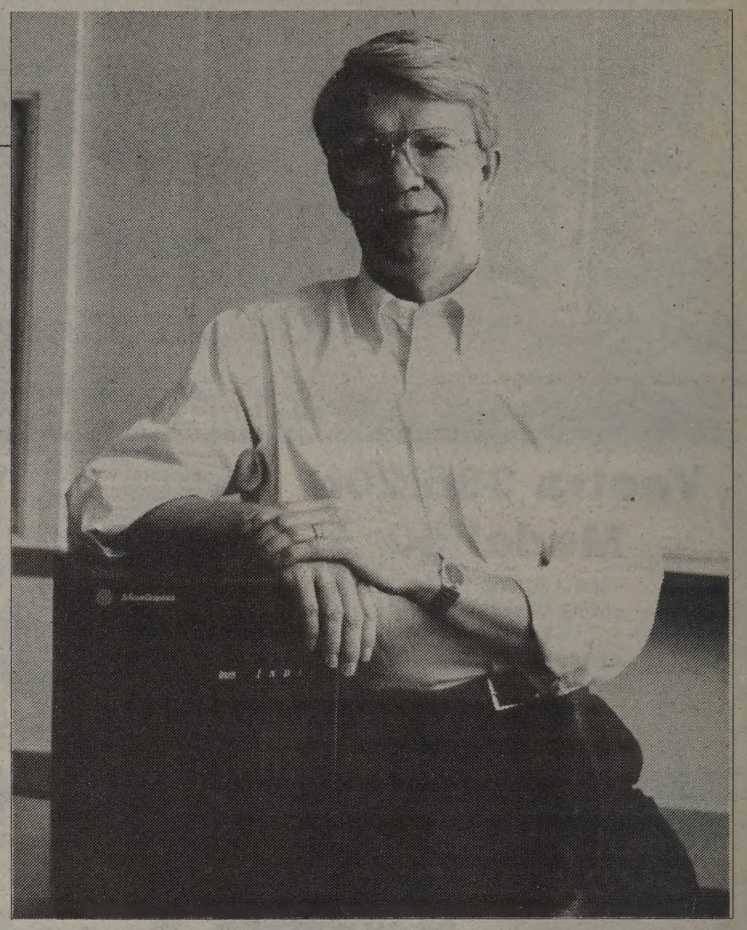

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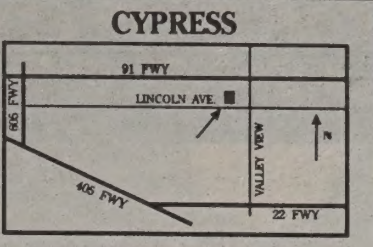

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Silicon Graphics Paints The World Indigo 56

By Mary Eisenhart
When we visited Silicon Graphics for the first time three years ago, it was the uncontested leader in various niche markets that required state-of-the-art 3-D graphics workstations. The Iris Indigo, launched last year, is the first salvo in SGI's campaign to take over a lot of Mac and PC desktops in the next decade. President and CEO Ed McCracken explains.

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OS/2 2.0: Still Not Ready For Prime Time? 70

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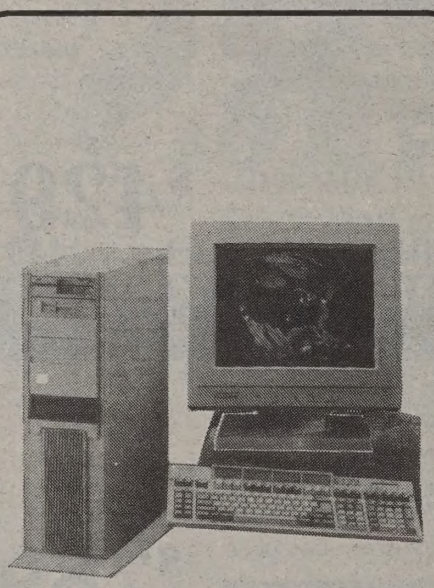

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- Internal Clock/Calendar

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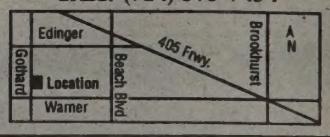

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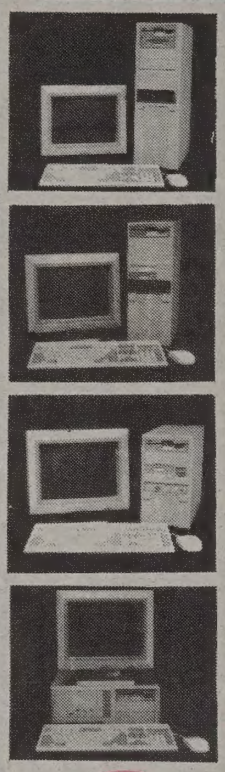

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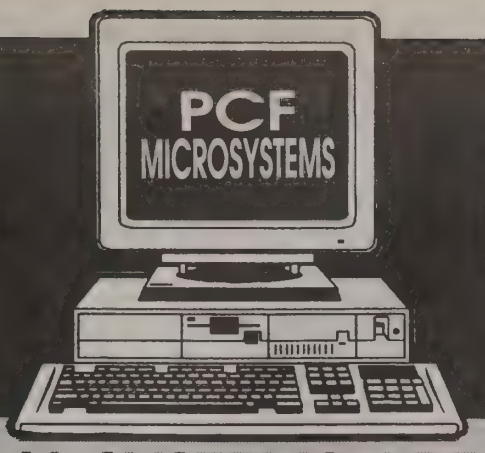

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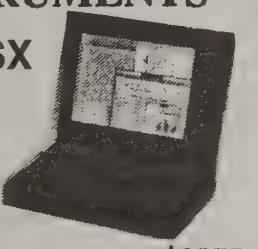

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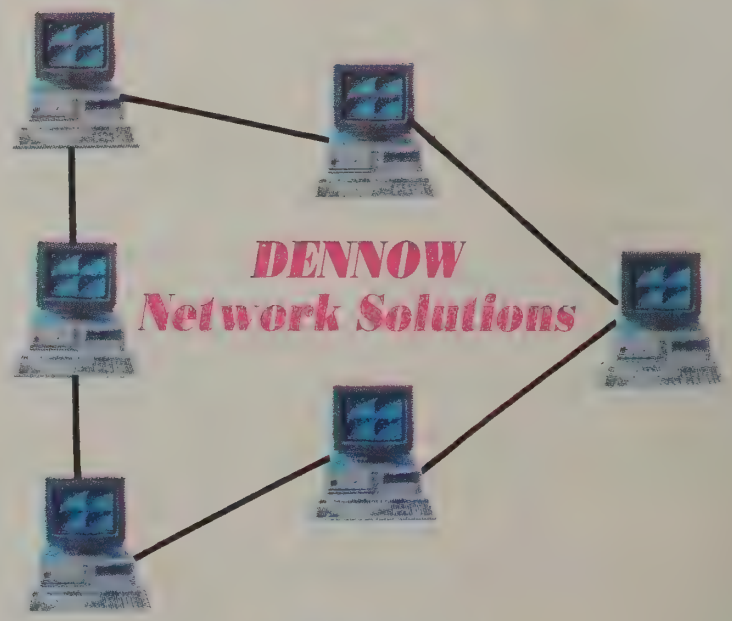

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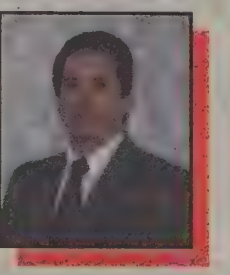

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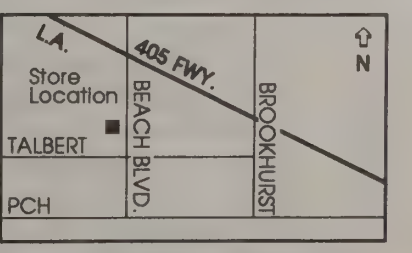

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Letters

WALKER YES, DVORAK NO

I just wanted to let you know how much I enjoyed your article "Autodesk: The Next Generation." I love to hear what people who shaped this industry have to say. John Walker is straight as an arrow. I wish some of our "leaders" in DC had a chance to read the article. It might give them some insights into the pathetic workings of our economy. Keep up the work like that.

Reading an article like that makes me despise the unjustly famous industry leech John C. Dvorak even more. Get rid of that pathetic pompous, buffoon. All *he* ever blows around are his opinions about what other people produce. If he could ever live up to his own criticism he might amount to something.

Abrasha Staszewski
The WELL

DISKLESS: PRO AND CON TALES FROM THE REAL WORLD

Pardon me if I gag just ever so slightly over the Business Solutions piece "Freedom From the Floppy," by Peter John Harrison. But it embodies just the kind of techno-nerdy, do-it-because-it-can-be-done thinking that still gives technological solutions a bad name among real-world users and buyers.

The advice Mr. Harrison offers—to put together a custom network of emasculated, disk-driveless workstations in order to cut costs and increase the system administrator's sense of control—brings up memories of my own involvement in putting together a customized, non-standard network of IBM PCs.

I was an account supervisor in the San Francisco office of a large, New York-based public relations agency. As the only person in the office with any notion of the meaning of the acronym DOS, I was designated as point man in the replacement of our Wang system with a 16-station LAN.

The agency's New York MIS group, after rejecting out of hand my recommendation that an office full of people whose computer literacy ranged from neophyte to hostile phobia would do better with an oh-so-much-more-user-friendly Macintosh system, came up with an assemblage of IBM PS/2s, 3Com server, and WordPerfect 5.0.

To cut costs, the PS/2s (IBM was a client of the agency at one time, and so the IBM brandwas adopted as a corporate-wide standard, user needs be damned) were to be monochrome Model 25s with 640K RAM, a single 720K 3.5" floppy drive, and no hard drives.

Now jump ahead a mere two years, and there is new management in the PR agency, a manager who despises DOS computers. He recognizes he can't dump a $90,000 system out the window in order to buy Macs, though, and he asks me, "Can we at least add Windows?"

Well, yes. And no. Yes, a network of IBM PCs should be relatively easy to convert to Windows. If each workstation has a hard disk drive. If each workstation has sufficient RAM. If the PR agency is willing to buy new software (using the agency's merely-two-years-old WordPerfect 5.0 under Windows is like going on vacation to watch television reruns in a hotel room).

Now, no transition of this kind is ever going to be painless, or free. That much is understood on both sides of the question. But—and it's this *but* that separates the Harrison school of thought from my own, non-techie frame of mind—the further you drift from standards, and the more creative you get on your system configuration, the less flexible will your system be when the next cat's-pajamas, gotta-have-it revolution in systems or software comes on the market next year, or next month, or next week. And mark my words, that day will come.

No sooner than Mr. Harrison's clients have paid him his fee, some new program will hit the street that the manager of the office now saddled with his system is going to want to use. Or perhaps it will be the successor to that manager, a successor who had no say in the configuration of the system, but who will nonetheless have to deal with it. Maybe it will be a new word processing program, or an upgrade to the one they are using now. Maybe it will be a new spreadsheet that just one of the users in the office wants to add. Maybe it will be nothing more than a game, or a demonstration program, or God only knows what. But getting it to run on that jerry-rigged system is either going to be hell, or it simply won't happen, and another office will rue the day it allowed a computer consultant to walk in the door.

The day may come when computer systems stabilize, and components standardize, and upgrading is as painless as buying a new set of tires for the family car. But that day is not here, and is not likely to be here very soon.

No offense intended to Mr. Harrison or the computer consulting community, but until that day arrives, I say beware the custom configuration, or else have very deep pockets indeed.

Jerry Ford
Concord

Peter John Harrison responds: *It may seem like a good idea to include hard drives in each LAN workstation's configuration, but for large, medium, and even most small LANs, it quickly becomes a liability.*

One of the major advantages LANs have over a fleet of standalone PCs is the ability to

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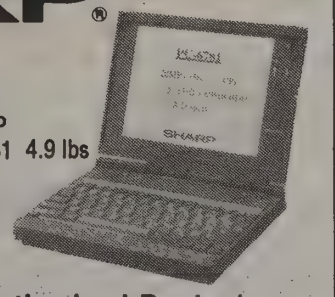

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allow users to share programs and data. When each workstation has its own hard drive, network users often lose this ability—even on "peer-to-peer" networks that allow shared access to any hard drive on the LAN. When each system has its own drive, it can become a hassle to hunt through all those hard disks, each with its own directory structure, to find the most current version of a particular file. Then, once it's been found, it may be useless because it's been modified using a different program (or a different version of the same program).

Having a central file server to act like a large, shared disk drive provides users with a common pool of data and matching applications programs that everyone can use. If someone needs a program not available on the network, it can be installed in a public directory on the server (where everyone can get to it), or in a private directory on the server (where only the authorized user has access). Storing data centrally also makes it easy to back up, something most end-users don't enjoy doing.

With all programs and data installed on the server, there's no real requirement to have hard drives on the workstations. Even the floppy drives are mostly used only to boot up the PCs and get them logged into the network. In such an environment, diskless workstations make a great deal of sense.

AMIGA LIVES, WITH OR WITHOUT COMMODORE

I've been reading Mr. Leeds's column for some time, and I'll have to tell you that I could see it coming. In recent months, he seemed like a writer that was trying to meet a deadline rather than someone writing about something they enjoyed.

There is no question that Commodore has botched the marketing of the Amiga, but that does not make it any less of a computer. I don't really care if there are more PCs than Amigas. All I know is that for video graphics and sound manipulations, the Amiga is my number one choice. However, for word processing and spreadsheets, naturally, I'll turn to my 386, and Word and Excel for Windows.

Through sheer brute force, the PC is overcoming its hardware limitations and moving into the graphics arena. Microsoft seems to be determined to shove multimedia down everybody's throat, but the majority of people may see that they just don't need it. The PC has flourished because it did what most people needed a computer to do. Multimedia will be a much harder sell. Besides, the Amiga is already well entrenched in the video area and PCs have a ways to go.

PCs are also hampered by a plethora of "standards." With manufacturers going in all different directions, I'd be pretty scared to buy a new PC. Scared because I couldn't be sure that it would be compatible with new software. Scared because it would be a crap shoot if I ever wanted to upgrade or add new components. I have held off buying a new 486 for just these reasons.

In any event, I think you could have handled Mr. Leeds's departure a little differently. Everybody gets tired at some point in their careers. Why not let somebody take over the reins that still has the fire and passion for the Amiga? There are a lot of them out there.

Douglas Nakakihara
Simi Valley

I had finally made it to my not-so-local dealer, and was on my way home with some reading material. I arrived home and tore into *MicroTimes*, eager to read the little tidbits on my favorite computer—but wait! Where is the...no, it can't be! The Amiga section

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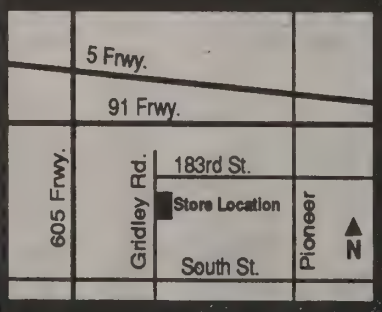

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is...gone? But, but you can't! No! Aaaaaaarrrrrggghhh!

Oh, there it is, the farewell column? Does that mean Amiga coverage will be ending?

I am quite saddened by the departure of Matthew Leeds's coverage of the Amiga in *MicroTimes*. I have taken for granted his informative, hopeful column on the best computer under $2000—hell, under $5000!

As I read the column, I found myself consistently agreeing with Matthew regarding Commodore's handling of the Amiga. It is a tragedy that such a wealth of innovative software will find its way into the hands of so few.

My position as a local area network administrator of a Banyan LAN places me in constant contact with Intel-based DOS/Windows/OS/2 and Macintosh platforms. I see time wasted on these platforms that could be saved on Amigas. Unfortunately, much of the saved time would be wasted on difficulties seen networking the Amiga. I can't approach my superiors about Amigas without LAN support any more than I could approach them regarding Macs before they were supported on Banyan LANs.

I will miss your column, Matthew. It is the main reason I read *MicroTimes*. The other stuff is informative, but not reason enough for me to look for the magazine, never mind look *forward* to it. I only hope you maintain support for "the best kept secret in computing"—the Amiga.

Charlie McCready
Thousand Oaks

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LEASING
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Mary Eisenhart responds: *As I said on the Contributors page last issue, we are acutely aware of the passionate devotion and innovative genius of the Amiga user community. We want to continue to support that community. We're currently trying to figure out the best way to do it and we'd like to work together with Amiga users to help make this happen.*

But here's the situation. In the eight years we've been publishing, we've seen a lot of great systems with deeply committed users become orphans and disappear. Some Amiga users might remember the Mindset, another beautiful graphics machine ahead of its time. It died.

We have here a situation in which the parent company has essentially orphaned this machine, for reasons best known to itself. To cite only one of Mr. McCready's points, the Macintosh has supported networking since 1985. The Amiga doesn't do it yet.

We don't want the Amiga to go the way of the Mindset, and the TI 99, and the Gavilan, and a lot of other machines people really liked. We recognize that continuing to offer editorial coverage of the machine is a useful tool in staving off hardware death, if only by keeping committed users informed.

And on the other hand, things being what they are, we can't inform you if you don't inform us.

We know there are lots of people out there doing great things with their Amigas, often things other people would like to know about. These people rarely send us press releases or call us; they're too busy doing their work, and rightly so. But the result is that we don't know about them.

So what it really comes down to is this. All you fiery and passionate Amiga users out there, send us mail at any of the above addresses. Tell us what you're doing. Tell us about interesting things other people are doing. If we think the story is of interest to a significant number of Amiga users, we'll put a writer on it. Let us know if you want to write stories yourself.

We are very willing to keep covering the machine. We can't do it without your help. Let's see what we can do.

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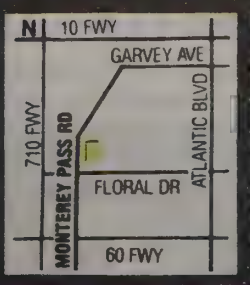

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INDUSTRY INSIGHT

CPU Price Competition: Good News For Buyers

BY PAUL HOFFMAN

COMPETITION HEATS UP THROUGHOUT CPU INDUSTRY

Microcomputer buyers have become used to the constantly falling prices of everything from PCs to mainframes. The impetus behind the falling prices has usually been the falling cost of peripherals and the introduction of new CPUs, forcing down the price of other CPUs with about the same power.

For the first time in the PC industry, prices will drop due to a new factor: competition.

For the first time in the PC industry, prices will drop due to a new factor: competition. Now that the market has many competitors who can compete on power, Intel is being forced to compete on price.

Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on Internet (phoffman @well) or CompuServe (71545,346). He also writes popular microcomputer books.

Now that the market has many competitorwho can compete on power, Intel is being forced to compete on price. The result will be a rapid price drop for "high-end" PCs this year, even before Intel announces the 586.

Until last year, Intel had no serious competition in the CPU market for PCs. Motorola's 68000 family of CPUs, mostly used in Apple Macintosh and Sun computers, made an almost unnoticeable dent in Intel's sales. AMD's very successful entry into the middle of Intel's market last year forced Intel into concentrating only on the high-end chips, primarily the 486 family. When Cyrix introduced very competitive 486SX clones priced like 386SX chips, Intel turned up the heat on its marketing campaign to make the 486 the only chip that anyone should consider seriously. Yet 386-based computers continue to sell well, and at least 80% of all laptops sold are based on the "lowly" 386SX.

Cyrix recently turned up the heat even more by announcing that they will enter the 486 market at a low price before the end of the year. AMD, although it hasn't made any specific announcements, is likely to get there first with chips that are even more price-competitive. Intel's major defense against Cyrix and AMD, litigation, is not worrying many computer manufacturers for now, given Intel's recent losses and setbacks.

Intel's next generation of CPU, the 586, will probably be priced so high that it will take a year or two to start putting pressure on AMD and Cyrix. Given that the 486 is more than sufficient for the average user's needs, even when running CPU-hogs like Windows and OS/2, the 586 will mostly be used in high-end applications like network file servers and CAD workstations until the end of 1993. In the meantime, Intel will have to battle to keep a significant footing in the middle of the market.

The best way that Intel can do that is by cutting prices faster than it has in the past. Of course, lower CPU prices will immediately translate into lower machine prices, particularly in systems in the middle of the market. Intel started that movement by slashing the prices of the 486SX to be delivered in the third quarter of this year by around 50%. For the 25MHz 486SX, the price went from $282 to $119.

More important than the actual drop was the compression of the price difference between the fast and slow models of the 486SX. Currently, there is a $140 difference between the cost of a 16MHz and a 25MHz 486SX; in six months, there will only be a $20 difference. Even with significant manufacturer mark-up, this means that the price difference between computers using these chips may be $100, an almost insignificant amount for a 50% faster system.

The 486SX market may not be as prosperous as Intel had hoped. One of the touted advantages of buying a 486SX computer instead of a 486 is the availability of an add-on CPU slot for later upgrading. Intel has just started releasing the upgrades in the form of the OverDrive chip. These chips add the floating-point unit that Intel removed in the 486SX and double the internal speed of the chip. However, many companies testing the OverDrive chip report that the overall speed improvement is more like a mere 40% of the original 486SX at a steep cost: $700 for the 25MHz system. As you can see from many of the ads in *MicroTimes*, for $700 you can buy a new motherboard with a full 486 33MHz CPU on it, making the advantage of adding a chip with a narrower data path seem pretty silly. In the long run, most customers will find buying the higher-powered system a much better bargain.

Intel's price cuts will certainly put a great deal of pressure on Cyrix and AMD. Those companies will have to cut their prices to compete with the company that has the lion's share of name recognition and history in the PC industry. Many people think that Cyrix and AMD can make such cuts, but probably at the expense of R&D in future chips, dimming their long-term prospects. They will survive if they do well in areas that Intel has ignored or been too expensive in, such as low-power CPUs and CPUs with additional

features (such as better cache management).

The high end of the workstation market also got a similar boost as Texas Instruments (TI) and Cypress announced separate high-end SPARC CPUs. Although SPARC-based systems have made almost no impact in the PC marketplace, they have put price pressure on the high end of the PC market and spurred the interest in UNIX.

The new CPUs, dubbed SuperSPARC (from TI) and hyperSPARC (from Cypress) are significantly faster than the current crop of SPARC systems due to better internal design. Systems using the new chips will push down the price of all SPARC systems, putting further pressure on the PC market. Systems based on the new chips will come out about the same time that 586-based systems become available, forcing users to decide whether to go with a high-end Intel-based system or a low-end workstation based on SPARC or other RISC CPUs.

NOVELL CHANGES NETWARE PLANS

Responding to an outpouring of user demand, Novell has changed significant aspects of future versions of its industry-standard NetWare networking operating system.

In the past, Novell consistently guessed wrong about how many of its current customers would upgrade, always assuming a higher demand than actually occurred. For the first time, Novell is admitting that there should be two product streams, v3.x for current users and v4 for more advanced users and those with larger networks. The next major release of NetWare, expected later this year, will be called 4.0 instead of 3.2, and Novell has committed to keeping the 3.x line alive.

The news of Novell's conversion came as it admitted the failure of the trial balloon it had sent up for 1000-user networks. Two years ago, Novell announced a 1000-user version of 3.1, then rescinded the announcement, then started selling it to selected customers for $25,000 and a mandatory $5000 maintenance fee. As many of the trial users discovered, that system barely limped along if it was used for anything more demanding than simple email; also, many NetWare administration utilities, including those from Novell, didn't work with any more than 250 users. Recently, Novell has committed to supporting 1000-user systems in v4.0 and will stop supporting them in the current version.

Because of the number of people who probably won't upgrade to the next version of NetWare, Novell is going to support both product lines, with v4.0 being much more advanced than the 3.x line. For example, 4.0

continued on page 109

INDEX SHEDS POINTS AS INVESTORS ROTATE TO CYCLICAL

It was a rough and tumble month for computer stocks, as the Microtimes Stock Index dropped 79.62 points, or 2.19 %, before finally closing the session ended June 5 at a mark of 3562.74.

During the same period, the Dow Jones Industrials soared above the 3400 level for the first time, reaching as high as 3413. The national benchmark was reined in, however, by a gloomier-than-expected May unemployment report and closed at 3398.69—a 0.87 % increase for the period.

When talk turns to economic recovery, as it often did during the month of May, traders and investors alike turn to cyclical shares. Unfortunately for the shares in our index, most are still considered growth issues, so they were sold by many in order to finance other purchases.

Hewlett-Packard, for example, saw its share price lose $7.88 before finally coming to rest at a price of $72.38. Investors were obviously listening harder to the company's description of its near-term outlook as cautious than to its second-quarter earnings. Earnings which jumped from $0.93 per share during 1991 to $1.28 during 1992.

Lotus' shares were also victimized, as they lost $3.13, or 9.92 %, before ending matters at a price of $28.38. The company predicted during the period that its second-quarter net income would probably be in the $0.45 per share range, significantly below the $0.52 that many analysts had been predicting. The result was, of course, a cut in most analysts' earnings predictions and, consequently, a cut intheir recommendations for the stock.

Apple Computer was another firm feeling the cut of analysts' knives, as its shares fell $7.13 before coming to rest at $54.88.

During the month, Goldman Sachs removed Apple's shares from its recommended list, citing lower earnings predictions for the firm.

The news was not all negative, however, as Microsoft was able to ride news of higher-than-expected Windows 3.1 shipments to a strong rise. Specifically, the firm's shares gained $6.50 before closing at a price of $121.

EXCH	COMPANY	TICKER SYMBOL	CLOSING PRICE 05/08/92	CLOSING PRICE 06/05/92	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH	P/E RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	ANNUAL HIGH	ANNUAL LOW
	SOFTWARE										
OTC	Adobe	ADBE	46.75	46.38	-0.38	-0.80	20	0.32	0.69	68.50	37.50
OTC	Aldus	ALDC	22.00	20.50	-1.50	-6.82	14	0.00	0.00	47.75	19.00
OTC	Autodesk	ACAD	34.00	36.00	2.00	5.88	17	0.48	1.33	62.25	23.25
OTC	Borland	BORL	48.63	51.75	3.13	6.43	–	0.00	0.00	86.75	39.50
OTC	Informix	IFMX	34.00	33.50	-0.50	-1.47	20	0.00	0.00	38.00	5.38
OTC	Lotus	LOTS	31.50	28.38	-3.13	-9.92	22	0.00	0.00	40.75	18.00
OTC	Microsoft	MSFT	114.50	121.00	6.50	5.68	37	0.00	0.00	133.25	60.50
OTC	Novell	NOVL	52.38	56.00	3.63	6.92	41	0.00	0.00	65.00	22.63
OTC	Oracle	ORCL	15.50	15.50	0.00	0.00	55	0.00	0.00	21.13	7.88
OTC	Software Publishing (L)	SPCO	13.50	13.88	0.38	2.78	–	0.00	0.00	26.25	11.25
OTC	Symantec	SYMC	39.50	42.25	2.75	6.96	56	0.00	0.00	51.00	19.50
	HARDWARE										
OTC	Apple	AAPL	62.00	54.88	-7.13	-11.49	20	0.48	0.87	70.00	40.25
OTC	AST Research	ASTA	18.88	17.63	-1.25	-6.62	8	0.00	0.00	32.25	14.50
NYS	Commodore	CBU	12.13	11.75	-0.38	-3.09	8	0.00	0.00	19.25	10.13
NYS	Compaq	CPQ	25.00	28.75	3.75	15.00	40	0.00	0.00	37.50	22.13
NYS	Digital Equipment (L)	DEC	45.25	40.50	-4.75	-10.50	–	0.00	0.00	71.75	39.50
OTC	Dell (H)	DELL	28.00	23.13	-4.88	-17.41	14	0.00	0.00	29.00	13.91
NYS	Hewlett-Packard	HWP	80.25	72.38	-7.88	-9.81	19	0.80	1.11	85.00	44.63
NYS	IBM	IBM	93.13	90.38	-2.75	-2.95	–	4.84	5.36	106.38	81.63
NYS	Silicon Graphics	SGI	18.00	17.63	-0.38	-2.08	22	0.00	0.00	29.75	13.25
OTC	Sun Microsystems	SUNW	29.75	26.50	-3.25	-10.92	13	0.00	0.00	36.38	20.75
NYS	Xerox	XRX	72.25	74.00	1.75	2.42	18	3.00	4.05	82.25	51.50
NYS	Tandy	TAN	28.25	28.13	-0.13	-0.44	13	0.60	2.13	32.63	23.38
	CPU'S										
NYS	Advanced Micro Devices	AMD	17.88	15.00	-2.88	-16.08	8	0.00	0.00	21.50	8.38
OTC	Intel	INTC	53.38	50.00	-3.38	-6.32	13	0.00	0.00	68.75	38.50
NYS	LSI Logic	LSI	7.13	7.13	0.00	0.00	48	0.00	0.00	9.88	6.25
OTC	MIPS	MIPS	9.13	9.13	0.00	0.00	–	0.00	0.00	16.63	7.38
NYS	Motorola	MOT	82.13	82.25	0.13	0.15	23	0.76	0.92	83.75	54.00
	COMMUNICATIONS										
NYS	AT&T (H)	T	43.75	42.13	-1.63	-3.71	90	1.32	3.13	44.63	32.88
NYS	BellSouth Corp.	BLS	48.88	47.75	-1.13	-2.30	15	2.76	5.78	52.63	43.38
OTC	MCI	MCIC	32.63	32.25	-0.38	-1.15	16	0.10	0.31	36.13	25.25
NYS	Northern Telecom	NT	38.00	39.50	1.50	3.95	19	0.32	0.81	49.25	35.88
NYS	Pacific Telesis	PAC	42.75	40.88	-1.88	-4.39	15	2.16	5.28	45.00	36.88

KEY: NYS = NEW YORK ASE = AMERICAN OTC = OVER THE COUNTER
(H) = NEW HIGH REACHED IN PERIOD (L) = NEW LOW REACHED IN PERIOD

MARKET DIARY:

ADVANCES	10
DECLINES	20
UNCHANGED	3
NEW HIGHS	2
NEW LOWS	2

MOST ACTIVE ISSUES:

LARGEST DOLLAR GAINER	Microsoft	$ 6.50
SMALLEST DOLLAR LOSER	Hewlett-Packard	$ -7.88
LARGEST PERCENTAGE GAINER	Compaq	15.00 %
SMALLEST PERCENTAGE LOSER	Dell	-17.41 %

	CLOSE 05/08/92	CLOSE 06/05/92	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH
MICROTIMES STOCK INDEX	3642.36	3562.74	-79.62	-2.19
DOW JONES INDUSTRIAL AVERAGE	3369.41	3398.69	29.28	0.87
STANDARD & POOR'S 500 STOCK INDE	416.05	413.48	12.57	-0.62
N.Y.S.E. COMPOSITE	229.20	227.88	-1.32	-0.58
NASDAQ COMPOSITE	585.76	585.43	-0.33	-0.06

CLOSING QUOTES FOR GRAPH:

DATE	MICRO TIMES	DOW JONES
10/25/91	3223.68	3004.92
12/12/91	3254.85	2895.13
01/20/92	3961.41	3254.03
02/14/92	3984.10	3245.97
03/13/92	3888.19	3235.91
04/10/92	3586.89	3255.37
05/08/92	3642.36	3369.41
06/05/92	3562.74	3398.69

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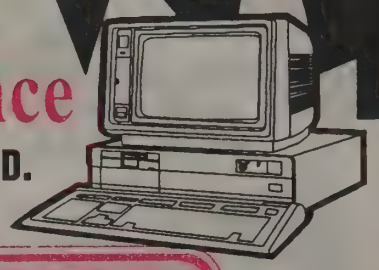

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The Dvorak keyboard (named after an inventor; not for my fellow computer curmudgeon) is a much more optimal layout, designed for speed. It's been around for decades—but do you know anyone who uses one? Have you ever even s*een* one? Me neither.

We may have no more success escaping QWERTY than the Japanese have had in escaping Kanji. At least not in traditional keyboards. But, something else is happenin', Mr. Jones.

Copyright © 1992 by Jim Warren, 345 Swett Rd., Woodside, CA 94062; email/jwarren@well.sf.ca.us. Permission herewith granted to copy-in-full for nonprofit purposes. *Jim Warren founded* InfoWorld, *the DataCast proposal for paperless electronic newspapers, Wireless Digital, Initiative Inc., and one of the nation's largest public microcomputer conventions. He was founding host of PBS's* Computer Chronicles, *founding editor of* Dr. Dobb's Journal, *and has chaired various computer trade and professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics and statistics.*

He organized and chaired the landmark First Conference on Computers, Freedom & Privacy (1991), sponsored by a dozen nonprofit and industry organizations, received one of the first Electronic Frontier Foundation Pioneer Awards (1992), and is a member of the board of directors of Autodesk, Inc.

In the late '60s, Doug Engelbart's group at SRI experimented with "chording" keyboards. These had only five keys. The user pressed several keys simultaneously—like a piano chord—to generate a single character. Now, chording devices are beginning to appear on the market.

InfoGrip offers the BAT—few-key chording pads that plug into a Mac. Rest one hand on a BAT and chord your keyboard input while your other (one-fingered) hand rests on the Mac's (one-button) mouse. Switch to quirky QWERTY only for extensive typing. There's also a pocket computer from England that has a regular keyboard—which, of course, is too small for touch-typing—but also offers a five-key chord-pad. Several people who use it find they learned it with less difficulty than expected and can "type" ten to thirty words per minute with it.

Murphy appears—the BAT and the English unit, of course, use different chording combos for the same characters. And the pocket unit requires the user to orient the device horizontally, as might be expected, but permits it to crawl as one types. Palo Alto's Jay Thorwaldson says it'd be better to position it vertically, so the heel of the palm could anchor its bottom while the fingers of one hand clap the keys.

Chording keyboards won't cure QWERTY, but they can offer some relief in a wide range of applications.

TAXING SOFTWARE

Although legislators will undoubtedly leap to one lip-smacking interpretation, this actually proposes quite another—a fully informed public:

Politicians send a misleading message—the delusion that businesses and corporations pay business and corporate taxes. Nope! They just collect 'em from customers and pass 'em along to the tax collectors. So, let's have businesses tell customers how much tax they're *really* paying for each purchase of products and services.

Put retailer's tax rates for each separate business and corporate tax-charge into their cash registers. Put the same information in every invoicing program. Then—when printing a customer's receipt or monthly invoice—explicitly identify, by percent and itemized amount, how much of what the customer pays is allocated to which "corporate" tax and "business" tax, versus how much the company is actually receiving for the product or service.

Do the same for employee payroll statements. Don't just itemize each employee's "official" federal income tax deduction, state income tax deduction, local income tax deduction, social security deduction, and/or unemployment deduction. Also itemize the company "contribution" to social security, company "contribution" to unemployment, etc. And show the total company "contributions" required for each employee—company-paid government loot for which the employee and employer can't even haggle or bargain. Be sure to show yearly totals. And for *real* truth-in-taxation payroll

"There's only one person who pays 'business' taxes." After all, now that the fifty-year war's over, it's only fitting to revise that "Uncle Sam Wants You!" poster.

reporting, also include itemized pro-rata amounts the company is required to spend for various facilities and benefits for employees—whether they want 'em or use 'em, or not.

And finally—business owners: Begin an ongoing media blitz about hidden taxes. Picture a snarling Uncle Sam, hand outstretched to the reader, palm up and clutching. Caption: "There's only one person who pays 'business' taxes." After all, now that the fifty-year war's over, it's only fitting to revise that "Uncle Sam Wants You!" poster.

Lotsa programmers' opportunities here, folks.

QUICKIES

• Let's use computerized voice recognition to scan C-SPAN—the 24-hour televised proceedings of the US House and Senate, suggests John Nagle (Menlo Park, CA). It could convert speeches into text which could then be stored, indexed, retrieved, and printed as desired. Now, if someone could also program a b.s. detector ...

• A product promotion notion that's gaining momentum, though horrifying some inept public-relations firms: Pay for Results. In the ol' daze, PR folks billed by the job, or by the hour—and the client hoped they were worth it. Now, more and more clients are defining PR payments in terms of number or length of product articles appearing in print, or number of sales leads received from a promotion, etc.

• Patent holders get monopolies for seventeen years. Noting this while objecting to software patents, Jim Rea commented, "Software goes bad faster than milk." Jim founded and owns ProVUE (Huntington Beach), is a multi-decade entrepreneur, and programmer and papa of Panorama, an innovative (and low-cost) database system for the Mac. He'd rather practice programming that promulgate patents.■

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*1 Wednesday	8:30-4:30	August 5

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WordPerfect on the MAC		
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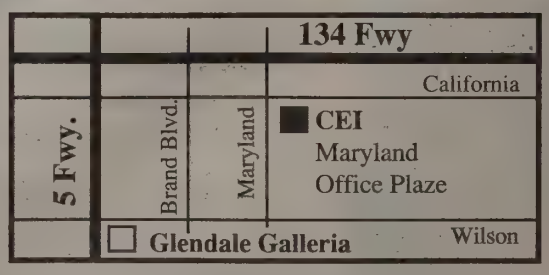
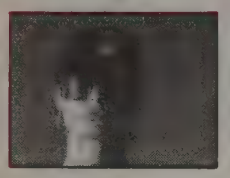


*Classes are conducted during business hours



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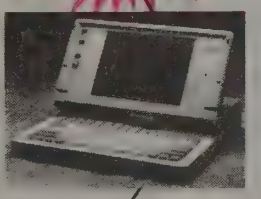

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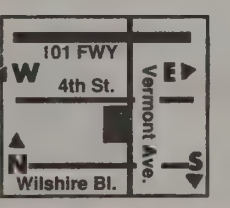

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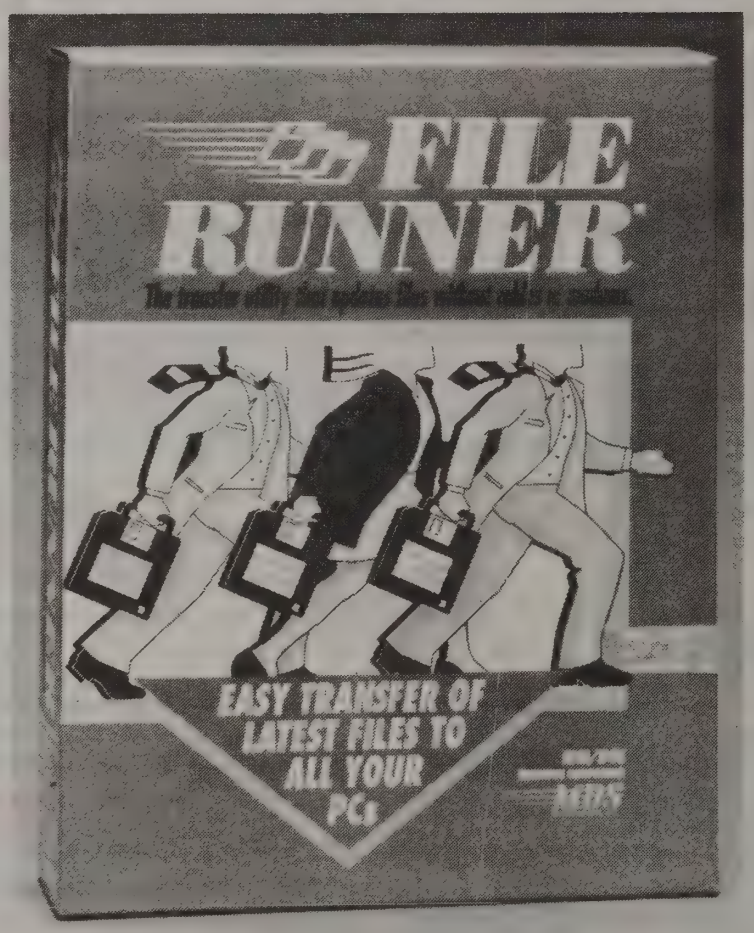
File Transfers Without Cables Or Confusion

FileRunner Solves The Critical Problem Of How To Safely Get The Latest Version Of Your Documents Onto All The PCs You Use

BY ED KAHN

While some use laptops and notebooks for the bulk of their computing, many are still using these convenient portables in conjunction with desktop units. As more people use multiple computers in their daily work, a problem developed—what is the best way to move the most current versions of files between computers? Over the years, various file transfer utilities have become available to help solve this difficulty.



As more people use multiple computers in their daily work, a problem developed—what is the best way to move the most current versions of files between computers?

The one common element among the various transfer utilities has been the cable that physically connects the computers. Traveling Software's LapLink Professional has been my favorite transfer utility. It is fast, easy to operate, and offers many options when transferring files. But in the end, no matter which utility you choose to use, this could mean a lot of work to move a few files. It also requires that you have both computers in the same location. Although notebooks are getting smaller and lighter, even with these machines it is rarely safe to assume that you will always have your second computer with you when you return from working with your other computer. Sometimes, as a partial solution and to save time, I copy and transfer the files I need via floppies. I have longed for a program that would easily copy files that are in multiple directories onto a diskette and then back onto the second computer, keeping track of when and where the different versions were created.

Now there is an innovative product that does just what I dreamed about, and more: MBS Technologies' FileRunner. You install the program on all of the computers that you use. So, for instance, if you like to work on computers both at your office and at home, you would install FileRunner on both ma-

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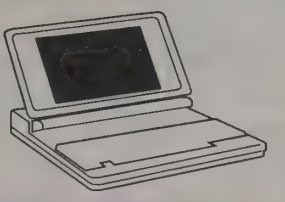

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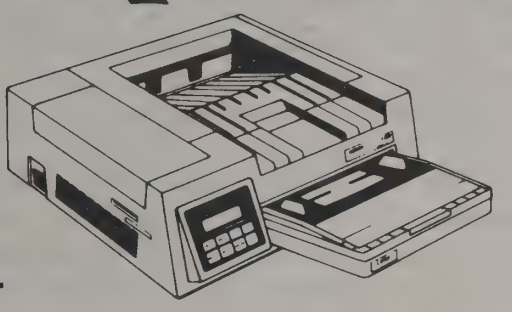

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chines.

At the end of the day, before leaving the office, FileRunner transfers the designated new and revised files onto a floppy diskette, moving back and forth with you between the two computers.

The program is not designed for people who are trying to copy an entire hard disk between computers. Rather, it is for those who only want to carry around the files they are working on. The first time you use the FileRunner, you tell it which subdirectories you want to regularly move back and forth. In my case, the bulk of the files that I use routinely fall within a few subdirectories; I always need my correspondence files, my current writing projects, my phone lists, and my checkbook files. FileRunner compresses and loads the changed and new files onto a floppy diskette.

As the program examines the files for transfer onto the floppy diskette, it gives you the options of copying, deleting, or omitting each file. This allows you to just move the data files you need for your work. The capacity of the diskette is the only limitation in the number of files you can copy. I found it advisable to limit the number of files transferred, leaving room for new files.

At the second machine, you insert the diskette and FileRunner compares the relevant directories, telling you how many files are new for this machine and how many are later versions of the existing files. It will then allow you to move all of the files onto the second machine, keeping both of your computers in sync.

When you are ready to return to the first machine, FileRunner modifies the files on the runner diskette that have been changed and lets you carry them back to the original machine. If you have erased files from the second machine, the program will ask if you also want to delete them from the diskette. If you have created new files in the selected subdirectories, it will copy them as well.

FileRunner is extremely well designed. There are many safeguards and frills. It asks for the time and time zone of each computer so it can really determine if a file is newer or not. And because the program keeps such good track of versions for each file and logs when you transfer files, it protects against overwriting files that have been changed on both computers. For instance, after moving files back from your portable to your desktop machine, you then change a file on the portable, the next time you transfer files back from the desktop, the program will catch that the file you are now moving from the desktop is not overwriting the same file it previously saw on the portable. You will be warned that the file on the portable has been changed and allow you to give different names to these two versions of the file and examine them both later to determine which one is the right one to keep or how to incorporate both sets of changes.

All in all, a very handy program. I highly recommend FileRunner to anyone who routinely moves between computers at several locations and is tired of *always* carrying one of the machines and the required connecting cables. FileRunner does not completely replace a cabled transfer utility, but it is a wonderful and often crucial supplement. ■

I have longed for a program that would easily copy files that are in multiple directories onto a diskette and then back onto the second computer, keeping track of when and where the different versions were created.

RESOURCES:

FileRunner, $99.95
MBS Technologies, Inc.
34 W. Sycamore
Arcadia, CA 91006
1-800-860-8700

LapLink Pro, $169.95
Traveling Software, Inc.
18702 N. Creek Pkwy.
Bothell, WA 98011
1-800-343-8080

Computer Of The Month

The Momenta Computer

Laptops and portables are pretty generic items these days. Although innovation continues and technological advances are always being made, the basic features seem to be uniform from model to model. Just about any notebook or laptop you choose can do the same job despite the attempt by manufacturers to claim that their computer is fundamentally standard, yet distinctive. From time to time, however, a radically new computer and revolutionary concept appear.

The Momenta is just such a machine. For years now, we have been reading about pen-based computing. Although several of these machines are available, they do not compete head on with standard MS-DOS computers. Rather, pen-based computers are targeted toward niche markets such as meter readers and UPS delivery personnel. The Momenta, however, has struck out in a bold new direction—targeting the standard notebook user and offering a better way to get the job done.

Whether the Momenta really offers a better way is still in question, but there can be no doubt that it has opened the door to new capabilities and potentials.

At first glance, the Momenta appears both similar and distinctive. Rather than having a screen hidden by a clamshell cover, when you remove this computer from its case, its display panel is revealed. Furthermore, it does not have a built in keyboard. Instead, the separate keyboard is easily connected by cable to the computer/display module of the Momenta.

When you turn on the computer, the screen displays a Windows for Pen logo and then takes you into a graphical interface that looks similar to Windows on your desktop or notebook computer. But in fact, you have entered into a new realm of computing. Mo-

RESOURCES:

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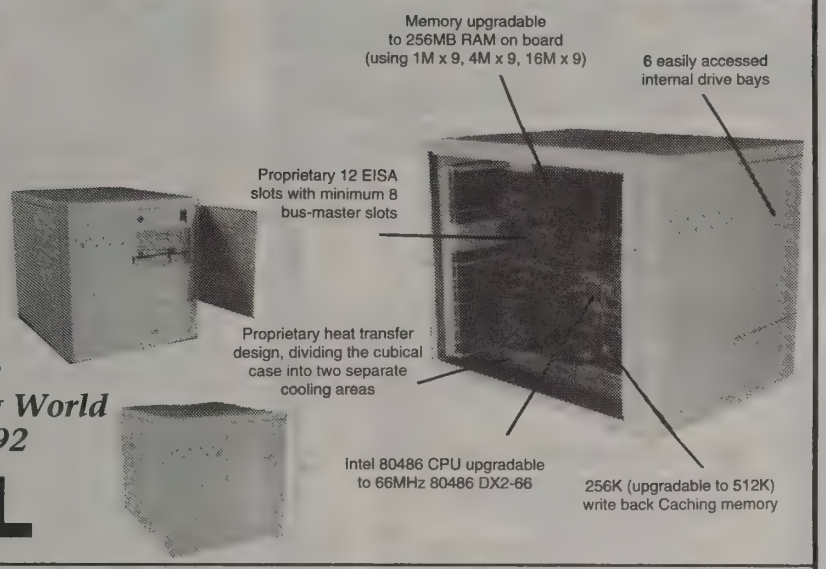
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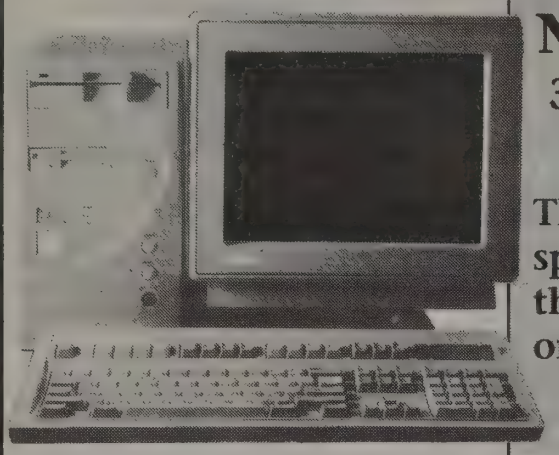

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486-33 ISA w/64K Cache	1264	1364	1398	1628
486SX-25 ISA	1140	1224	1264	1554
486SX-20 ISA	1090	1174	1214	1504
386-33 w/64K Cache	1040	1124	1164	1454
386SX-25 w/32K Cache	902	1012	1056	1342

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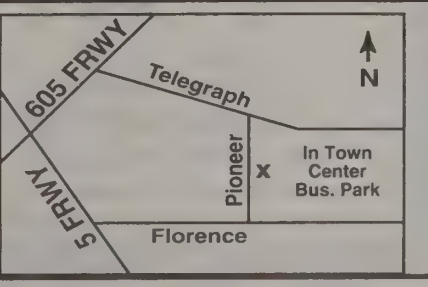

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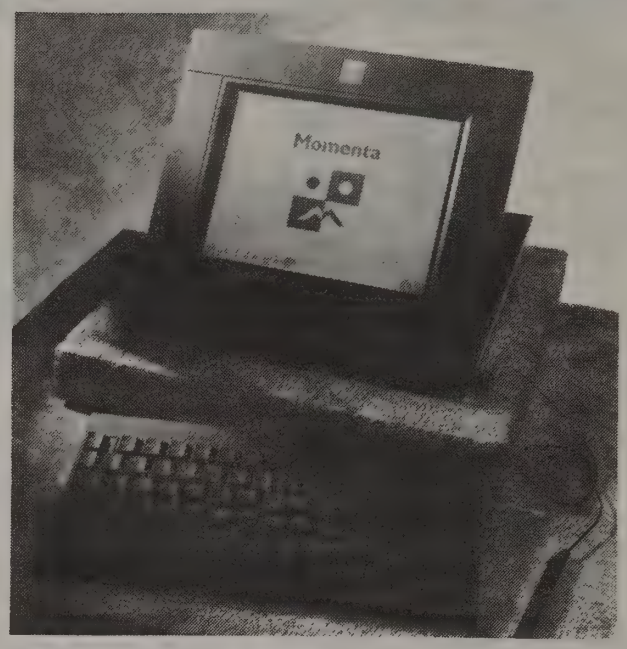

Whether the Momenta really offers a better way is still in question, but there can be no doubt that it has opened the door to new capabilities and potentials.

From time to time a radically new computer and revolutionary concept appear. The Momenta is just such a machine.

menta works with a pen, or stylus, rather than a mouse or a keyboard; although both input devices are still available to the user.

The stylus is used to enter commands by tapping the appropriate place on the screen. But the concept of using a stylus goes far beyond just using this pointing device instead of a mouse. In addition to entering simple Windows commands, you can enter text as well. This can be done in either of two modes.

In the simpler mode, the memo you write is saved as a graphical file and can be recalled. What you are doing is little more than using a computer to store a written memo. This is not really that useful for me because you cannot manipulate text, print it, or do any of the other things that have made word processing so widespread.

In its second mode, however, the power of the computer comes to life. Written text can be deciphered by the computer and translated into standard ASCII characters. Thus, you can enter text and have it converted into the same kind of input that previously only the keyboard could offer.

While this sounds fantastic, in practice it is not quite so simple. The Momenta does recognize a number of letters, and has the ability to learn to recognize the way you make your letters, but it cannot decipher letters that run together as in cursive writing. You are limited to either printing or at least separating each letter so the computer can distinguish separate symbols. And in fact, the computer is not as smart as I would have liked. In my test drive, I found that I had a hard time printing in a way that the computer could understand.

Fortunately, there are other ways of entering information into the machine. One way is to use a conventional keyboard and run programs directly from DOS. Another way is to call up a small keyboard on screen and touch the letters with the tip of the stylus.

While the Momenta does not yet offer a complete solution, it is clear that this unit points the way to the future. The basic machine is so filled with features that it is impossible in this review to do more than hint at its capabilities. It is set up to handle fax capabilities, even through a cellular connection. It can copy files through the included serial cable to other MS-DOS computers. It can run standard software as well as Windows for Pen, and comes with a package of pen-based applications.

While the documentation with the Momenta computer is only adequate, the company invites you to call their 800 technical support line and spend a half hour with them while they walk you through the basic features of this machine.

Despite its limitations, this is certainly a machine to examine. It is a different species of computer and does tricks the competition can't even imagine. ■

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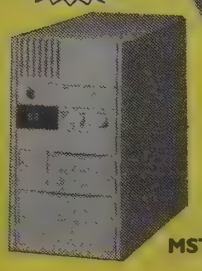
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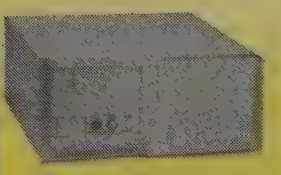
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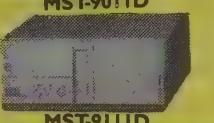
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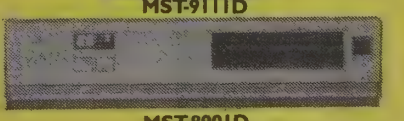
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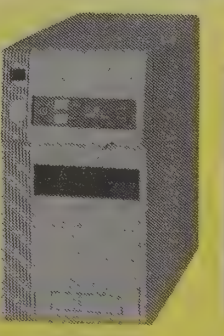
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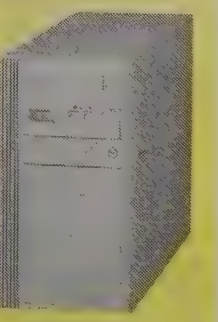
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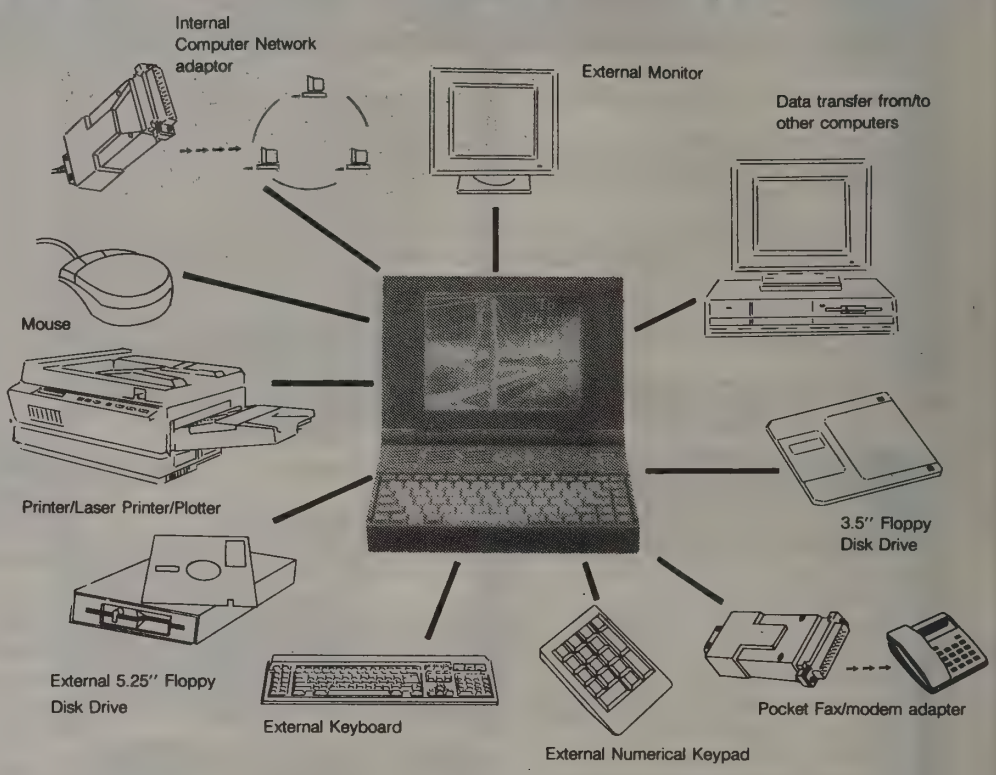

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- Super VGA adapter w/1MB
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- 101 key click keyboard
- MS DOS 5.0, MS Windows 3.1 & serial mouse
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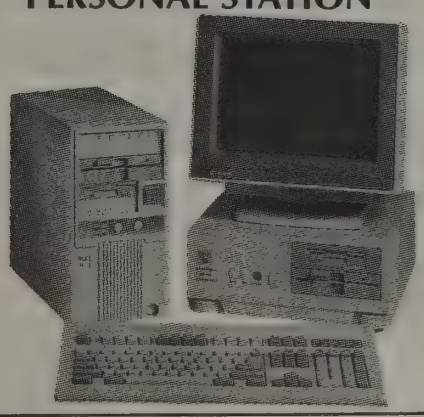

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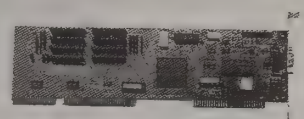

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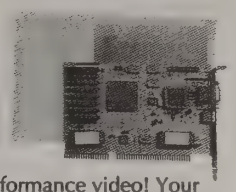

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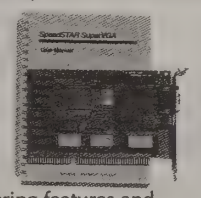

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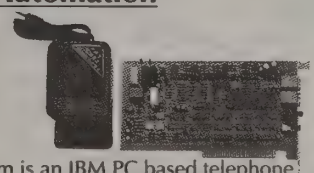

VP-932 Phone Card

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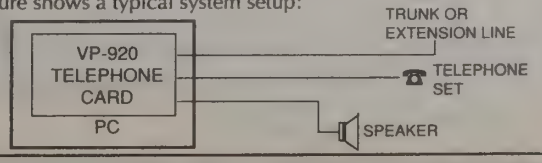

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Checking In On Voice Mail

A Voice Mail System From DemoSource Presents Zoetrope Studios A Solution It Couldn't Refuse

BY PETER JOHN HARRISON

Voice mail seems to bring out the best and the worst in people. Ask someone what they think of voice mail, and you'll probably get one of two responses: "I love it" or "I hate it."

For better or worse, voice mail is here to stay. The list of government agencies, corporations, even entrepreneurs developing and using voice mail systems as a centerpiece in their enterprise grows almost daily. With robust and inexpensive hardware and software products available for PC-based systems, more companies will be giving you options to "leave a message at the beep" and "press 1 for more options."

Most corporate voice mail systems are expensive affairs, costing tens of thousands of dollars to install and maintain. The introduction of PC-based voice mail hardware has brought the ante down to the point where some friends of mine have installed systems at home.

Brian Berman, president of DemoSource, a company that develops and markets PC-based voice mail systems, explains that they are "ideal for home-based and small businesses that want to put forth the image of a large, established company" without spending the tens of thousands many larger companies put out for their voice mail systems.

Zoetrope Studios, of Director Francis Ford Coppola, *Apocalypse Now*, and *The Godfather* film series fame, uses a PC-based voice mail system in their San Francisco headquarters. "We needed the auto-attendant feature to route calls to individuals after hours, after our receptionist has gone home," says Charlie Lamm, a technician at Zoetrope. The auto-attendant feature is one of the more popular options available to voice mail system users. With an auto-attendant, inbound callers have the option to "enter the extension of the person you are calling, or hold for an operator" (assuming one is available). As long as the caller knows the extension of the person he or she is trying to reach, the auto-attendant can transfer the call directly to that extension.

"I'd say, for the most part, our users like [the system], but they'd wish for more features, like a user directory," says Lamm. User directories are another useful voice mail option. Voice mail systems with user directories prompt inbound callers to enter the first few characters of a person's name if they don't know the extension they're trying to reach. If you were trying to reach me using a system with an auto attendant you would press the buttons 4-2-7 for "HARrison." Once those first few characters have been entered, the user directory matches the pattern of possible letters against the names of people on the system, and lets you select the correct name for the person you're trying to reach.

Aside from needing a tool to route calls after hours, Zoetrope needs voice mail boxes to take messages for people who are away from their desks, and "messages for our independent artists...who may be on-site, working from home, or be on the road somewhere." Voice mail lets Zoetrope employees and consultants dial in and get their messages, whether they're somewhere in the office or somewhere in Morocco.

To support its phone mail system, Zoetrope uses a 286-based PC-AT clone with four Talking Technologies PowerLine 2 boards, an 80MB hard drive, and DemoSource software to support its eight-line, forty-box voice mail system. The system hooks into Zoetrope's in-house PBX, and passes tone dial and hook switch commands back to it to route calls to their destination. Installing the system was easy; Lamm says it "took me and another engineer about a day to install."

While many companies are using voice mail to help route calls and take messages, others are building their entire business around the many capabilities voice mail has to offer. Phil

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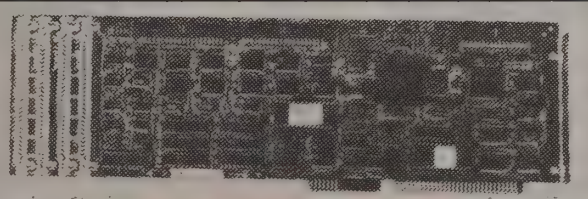

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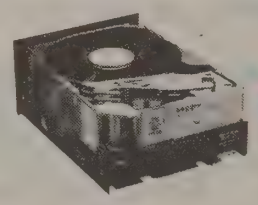

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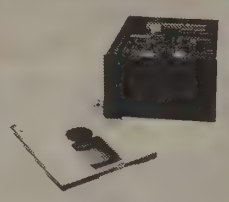

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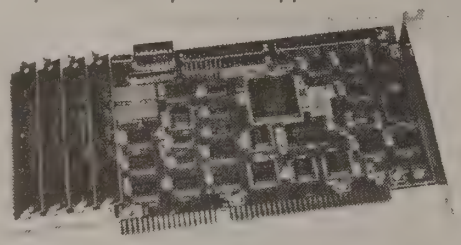

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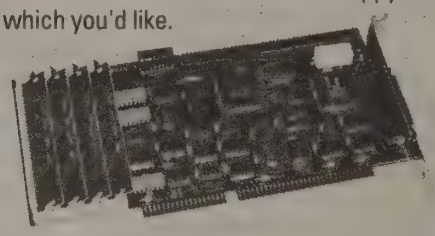

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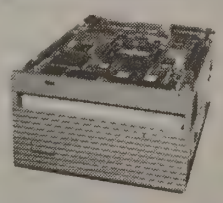

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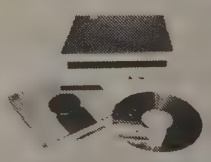

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Computer Software Law—What You Should Know
Instructor: Daniel Appleman of Heller, Ehrmann, White and McAuliffe

Introduction to C++
Instructor: Stephan Bechtolsheim, Integrated Computer Software, Inc.

XT and Widgets: Building Applications in X
Instructor: Berry Kercheval, Protocol Engines, Inc.

Making NIS Work for You
Instructor: William LeFebvre, Northwestern University

An Introduction to UNIX System Administration
Instructor: Dinah McNutt, Tivoli Systems

Topics in System Administration
Instructors: Evi Nemeth, University of Colorado, and Robert Coggeshall, Cogwheel, Inc.

POSIX Programming
Instructor: Jeffrey S. Haemer, Canary Software, Inc.

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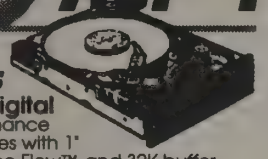

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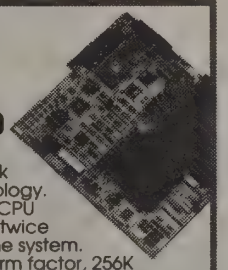

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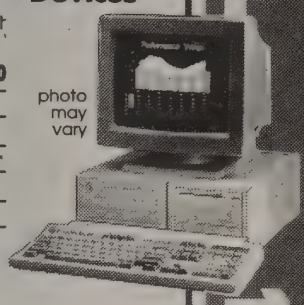

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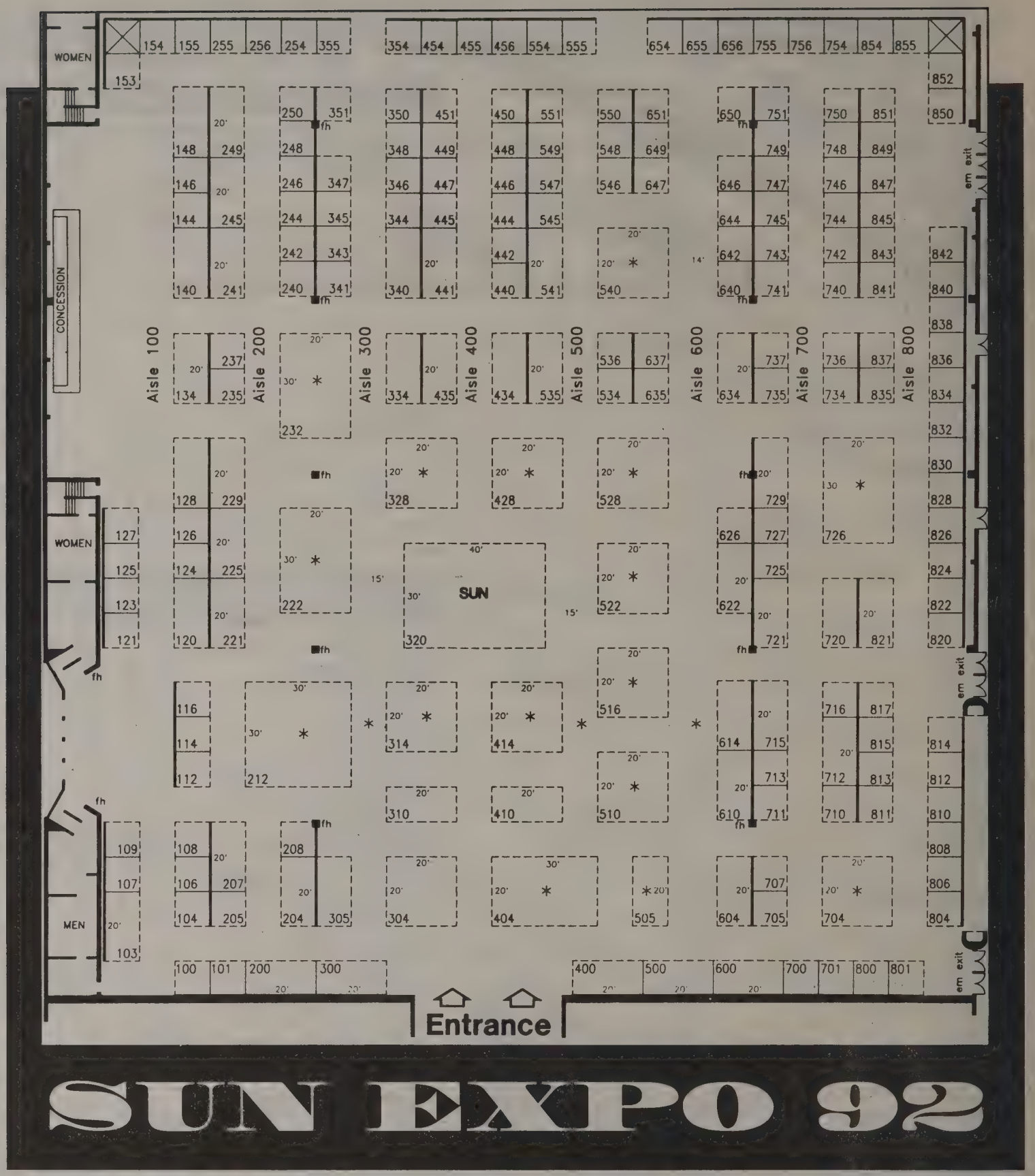

TECHNICAL SESSIONS
TUESDAY, JULY 21

9 am

Extensible UNIX Debugging
Don't Panic: An Engineering Tutorial on Porting Your Device Driver to Solaris
FDDI: Building a Company-Wide Computing Environment
Changing the Way Workstations Print
Enterprise-Wide Data Protection

1 pm

Virtual Partitions as a Disk Storage Tool
Network Acceleration in Hardware
Hierarchical File Servers
Service Trends: Implications of Sun Strategy on Maintenance
Backup Strategies

2 pm

How and Why SCSI Is Better Than IPI for NFS
What to Do With Your Internet Connection
Monitoring & Analyzing Large Networks
Bridging the Gap Between 2 and 3 Dimensions
Network Data Management

4 pm

Architectural Choices and Integration Frameworks in Object-Oriented Programming
Network Management
From ONC/RPC to TLI/RPC—Programming Standards

continued on page 127

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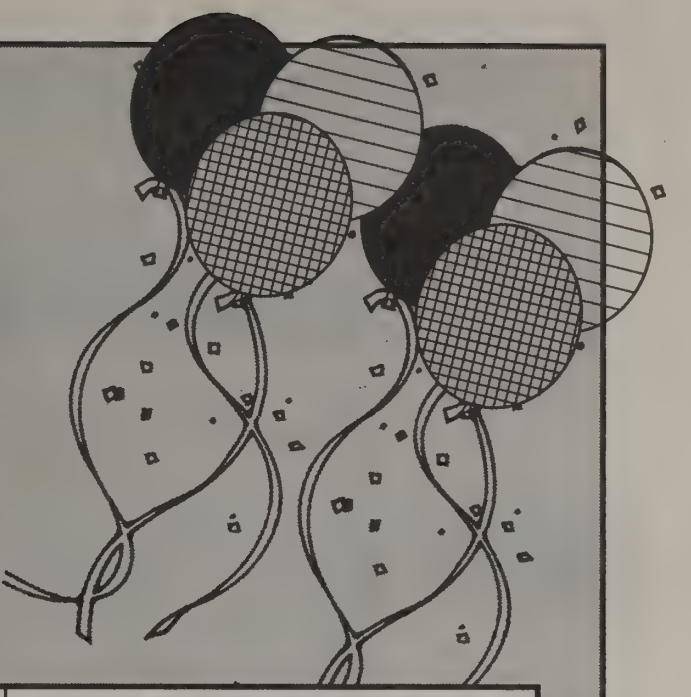

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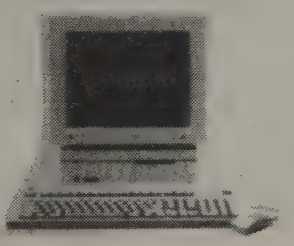

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More Hybrid Networks

Cost-Saving Technology From King Tut

BY YACCO

Last month Milan was in the spotlight here with its Alternet adapter, which converts thin Ethernet to 10BaseT. This month, I've got another device that connects Thinnet to unshielded twisted pair (UTP); but while this product also provides you with the physical layer for Ethernet, it's not 10BaseT.

The NM100 Assistant Network Manager is a valuable troubleshooting tool for both setup and maintenance.

KING TUT

MagicNet, from Tutankhamon Electronics, delivers on the original promise of 10BaseT. That is, it provides 10-mbps baseband transmission over 100 meters of UTP wire.

Isn't that what 10BaseT *does*, you ask? Not unless you replace your long runs of level-2 direct inside wire (DIW) with the level-4 datagrade stuff. MagicNet actually does 10-mpbs baseband transmission over cheap DIW wire, and it does it over a single pair, not the two pairs requried by 10BaseT. Moreover, it does it for much longer distances. You might even call it "10Base2T." That's a major advancement over 10BaseT, and offers very significant potential cost savings for any application where ordinary DIW is already in the walls.

Interested? You are if you want to build bigger networks and save money.

MagicNet's obvious application is in office buildings with existing communication systems. These typically already have wiring running throughout. However, the wiring is usually limited to just three pairs per drop, and most telephone systems require two of those pairs. That leaves a 10BaseT network one pair short. So, you start wiring all over again. Not so with MagicNet. It works with that remaining pair.

Installing MagicNet in this situation is perfectly simple. Put a MagicNet hub in the wiring closet, connect it to spare wires leading out to the drops, turn on power to the hub, and start installing the local drops. Each local drop can connect to as many as thirty workstations, via Thinnet, through one of Tutankhamon's Assistant Network Managers (NM100).

You begin your local installation by plugging an NM100 into the UTP drop. (Note: King Tut's net uses RJ-11 connectors, not RJ-45s.) The NM100 features an analog meter that takes you through every step of the installation. If the drop is properly wired, the needle on the NM100's analog meter will bounce back and forth between a pair of parallel-wire icons as soon as it's connected. Reversed polarity causes the needle to bounce between a pair of crossed-wire icons. If you hook up to the wrong wire pair altogether, or if the pair is defective, the needle sits on a question mark.

When the drop is properly connected to it, you connect the NM100 to one end of a Thinnet backbone. (It must be at one end of the bus, not daisy chained on a T-connector, because it has built-in termination.) Its needle will continue to bounce until a terminator is connected to the other end of the Thinnet segment. If anything is wrong—or ever goes wrong—with the local cable, the NM100 locks the segment out, and the rest of the network is unaffected. (The meter tells you that the segment is down.) If the Thinnet bus is good, the needle sits on zero, and the NM100 connects the segment to the hub.

The NM100's meter will continue to work for you once the network is up, indicating the level of local network traffic. "The relative health of a network," says Tutankhamon president Matthew Taylor, "is indicated by the level of traffic. It's sort of like taking a person's temperature. When your Ethernet is running about 30 to 40%, it's running very well." High traffic levels, on the other hand, are like a fever. They mean the network is inefficient. "If the needle is consistently above 60%, the data throughput decreases," maintains Taylor. He cautions that "Ethernet falls apart at very high levels of traffic."

Fortunately, knowing the traffic level lets you decide when you need to partition your network with a bridge. The NM100 not only provides this information, but its very location tells you where to put the bridge, and allows you to confirm the success of the new architecture.

CASE HISTORY

Corporations clearly have the most to gain from MagicNet—the larger the building, the bigger the bang for your buck—but smaller companies can reap some very special benefits too.

Take for example, the small three-workstation network that an

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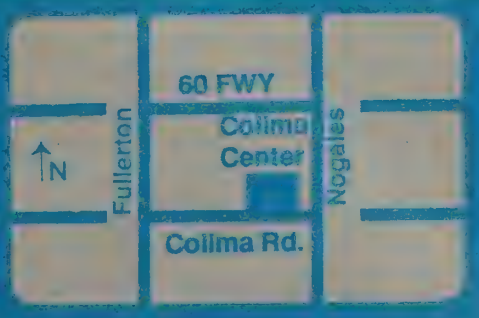

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Fortunately, Anderson had attended a trade show at the Irvine Hyatt the previous year, where he'd discovered Tutankhamon. Anderson reports that Tutankhamon worked with the existing conventional telephone wire: "We connected the workstations with the meter

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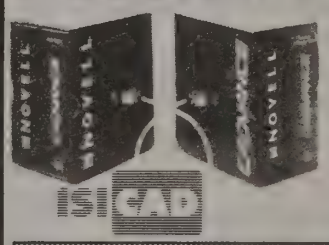

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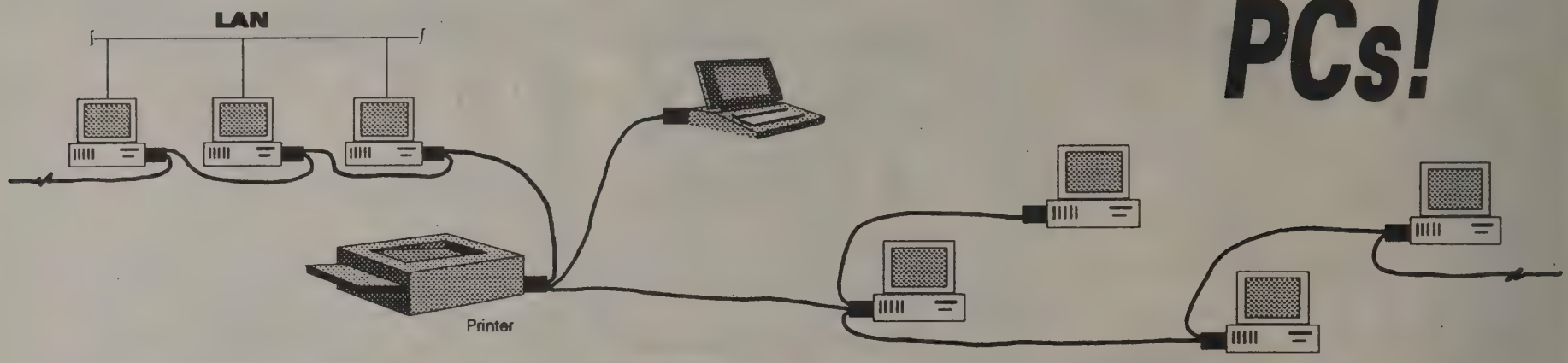

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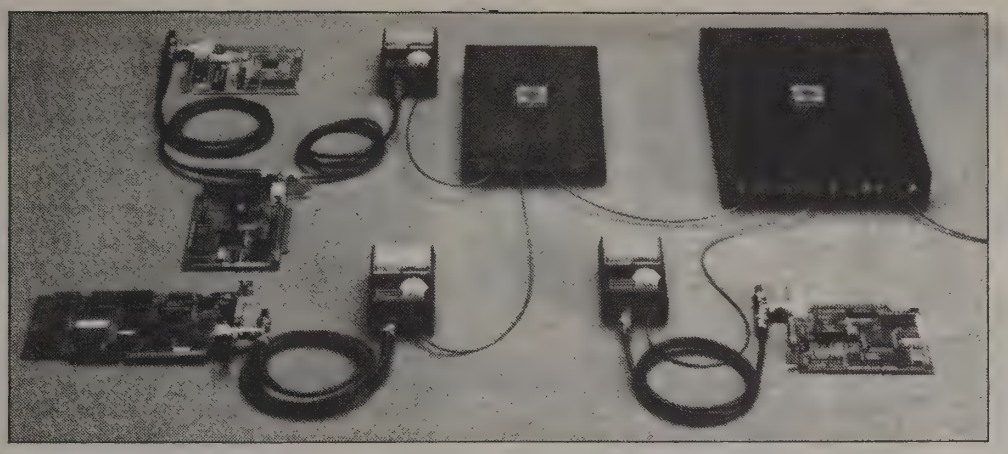

Tutankhamon Electronics offers a full range of products to help you build bigger networks and save money.

[Tutankhamon's Assistant Network Manager], and connected those with the installed telephone wiring to the MagicNet concentrator." Ordinarily, Computer Support's contract cable installers lay datagrade wiring. This time Anderson says, "It was practically nothing to connect the wire."

Anderson also says there were benefits for him. "The first thing I learned about networks was that you never set them up on the customer's premises until you've tested them at your own facility. As we were setting the machines up, the meter made it easy to verify the proper connection. The reason I bought Tutankhamon was to get 10Mbits on a single pair, but this turned out to be a bonus for troubleshooting."

RESOURCES:
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MagicNet MH800, $899
Assistant Network Manager NM100, $99
Active Balun AB100, $199
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Bruce B. Anderson
Computer Support Group
(714)261-5959

KING TUT'S CURSE (NOT!)

Just about the only drawback to MagicNet is its name. That must change in the near future, because another vendor got to it first. (Some rejected options: DeathMaskNet, SarcophagusNet, GraveRobberNet, DungBeetleNet, and my favorite: TutTutTutNet.)

Other than that, it is true that a MagicNet hub can't connect to a 10BaseT hub with a crossover cable. One type uses one pair, and the other uses two. You can connect a MagicNet hub to a 10BaseT hub, with an NM100 via Thinnet, if the other concentrator has a BNC connector. You can also connect a MagicNet hub with Tutankhamon's Active Balun (AB100). The AB100 is a transceiver, and can connect directly to an attachment unit interface (AUI) port on either a 10BaseT hub or a network interface card (NIC).

The benefits of this medium, on the other hand, aren't limited to old or problem installations. Tutankhamon devices themselves aren't expensive. Yet, two pairs of level-2 wire are much cheaper than four pairs of premium grade, and an NM100 multiplies the number of nodes that can connect to a single UTP drop much like Alternet does. Furthermore, Taylor claims that 75 to 90% of all failures on a network are cable faults. "So," he says, "real network management amounts to monitoring and diagnosing cable problems. The Assistant Network Manager is the only product on the market that diagnoses and monitors cable faults on-line. This is an integral part of your network, and diagnoses better than three-quarters of all your problems." That may sound like commercial hyperbole, and the claimed percentage may be high, but there's a lot of truth in what Taylor says. If you're about to install Ethernet, it could be worth tracing Carter's path into the desert to dig up King Tut. ■

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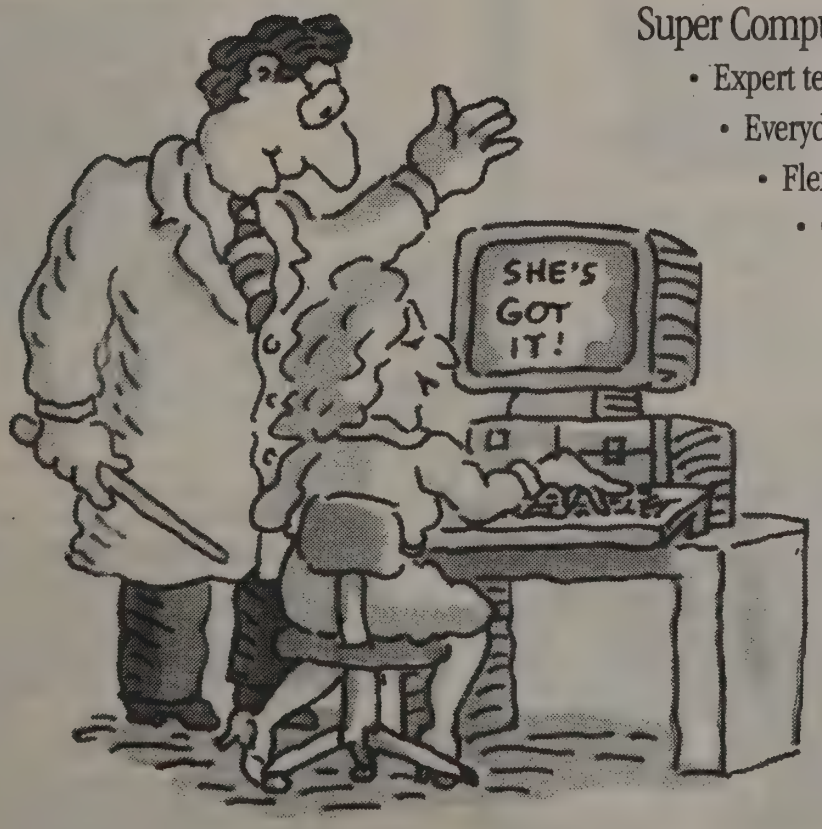

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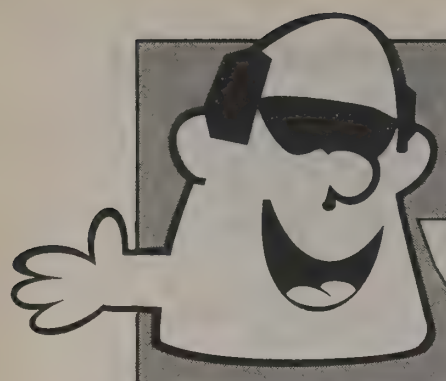

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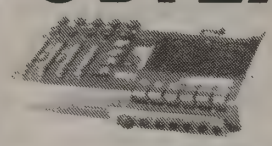

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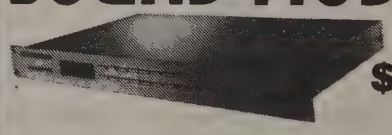

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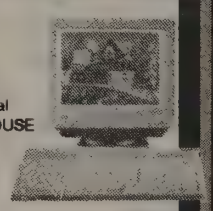

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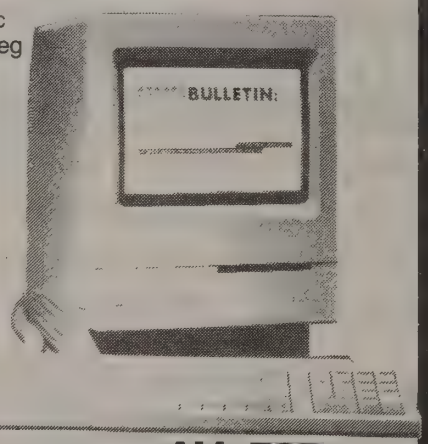

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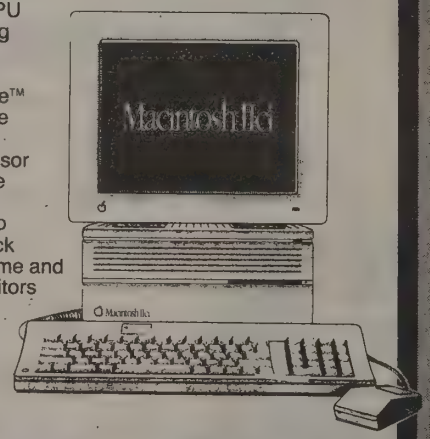

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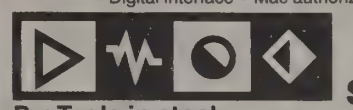

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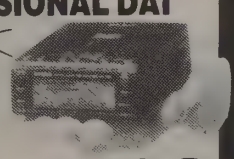

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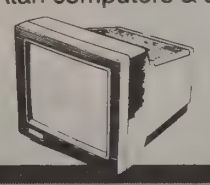

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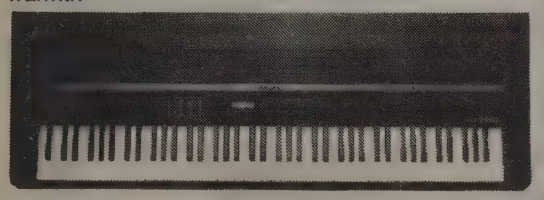

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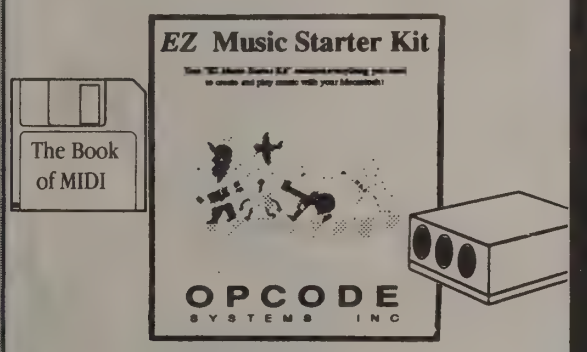

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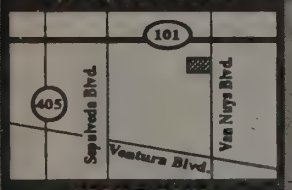

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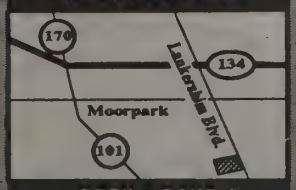

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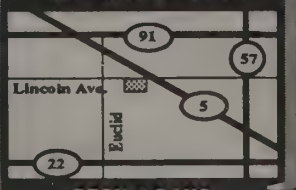

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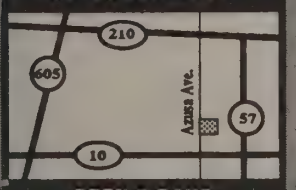

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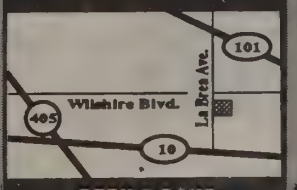

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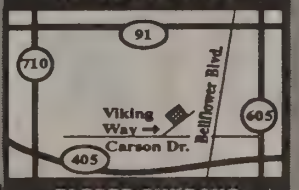
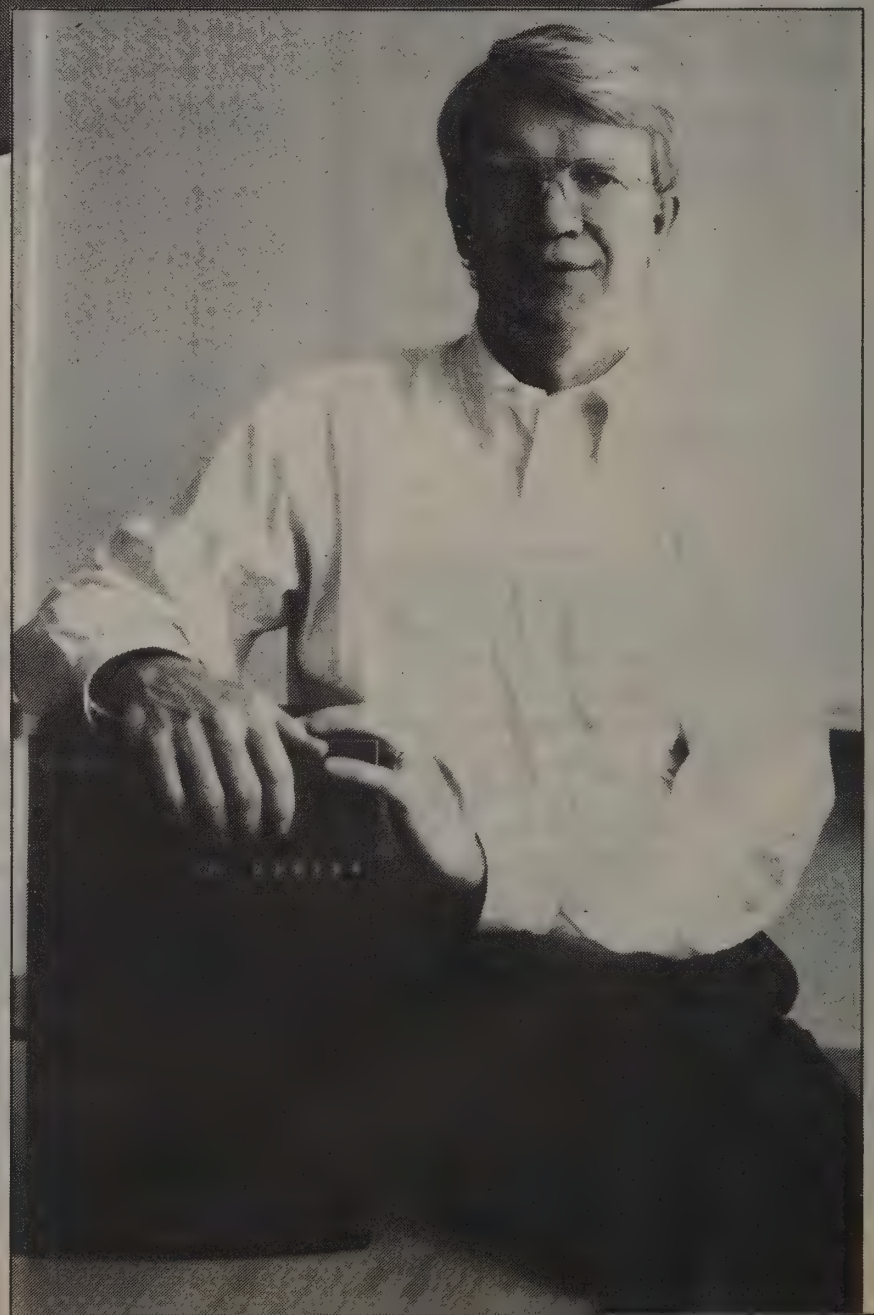


CLOSED SUNDAYS

Silicon Graphics Paints The World...

SGI President Ed McCracken On The Computer Of The '90s



BY MARY EISENHART

"We do all our production on Macs..." I say, by way of prefacing a convoluted question.

"Most people do. You don't have to apologize," laughs Ed McCracken.

McCracken, president and CEO of Silicon Graphics, has a lot to be cheerful about these days. When we first visited the company in 1989, few people in the personal computer world had encountered SGI's Iris workstations, unless they happened to work in one of its niche markets. Molecular modeling, say. Flight simulation. Virtual reality. Film animation.

These days, obscurity is not SGI's problem. Its technology turns up in some highly visible places—computer videos at recent Grateful Dead shows, for instance, in which the musicians' three-dimensional faces floated in space and morphed into each other. All over ESPN during the America's Cup races, using a satellite-based graphics system called SailTrack to deliver two- and three-dimensional graphics explaining sailboat positions, replaying key maneuvers, and providing ongoing highlights of the competition.

If McCracken has his way, Silicon Graphics machines, especially the affordable Iris Indigo, will be turning up in some other interesting places too—the desktops of current Mac and PC users. On the PC side, SGI, as part of the ACE consortium, will soon be offering Windows NT as an operating environment. On the Mac side, SGI has recently licensed Apple's QuickTime technology, and vendors including Quorum are offering products that allow Mac software to run on Irises—often performing much better than it does in its native environment.

SGI is currently in the final stages of acquiring MIPS Computer Systems, which designs the RISC chips used in Iris workstations and a host of others, including systems sold by MIPS itself, and will soon be moving MIPS employees onto its ever-growing campus in Mountain View.

Last time we did this [issue #54], it was a matter of explaining to a PC-using audience who you were and why it was worth paying attention to what you were doing. Now we don't have that problem so much.

That's good to hear.

There's a lot of stuff to catch up on. But before we get to the industry stuff—how did SGI get involved with the America's Cup? And what's this press release about joining forces with the Cousteau Society? Those things are a little out of the ordinary for your basic hardware vendor, and they sound like fun.

They are fun, and I think both of them are indicative of the kind of company we are.

On the America's Cup, we had two employees who just got interested on their own, playing around with this kind of thing. They happened to enjoy sailing, and just wanted to be involved, so they decided to do it. We supported them—after we found out about it. *[laughs]*

It was one of these under-the-table projects. They went down to San Diego and spent a couple of months in a van doing all the programming, making it all work. And what you saw on TV is what came out of it. It was just great. They're happy and we're happy and they enjoyed the time, and they helped the company out.

They're not quite sure what they're going to do next, but I'm sure they'll figure something out. *[laughs]*

And the Cousteau Society thing is somewhat the same way. We have an environmental program in our company.

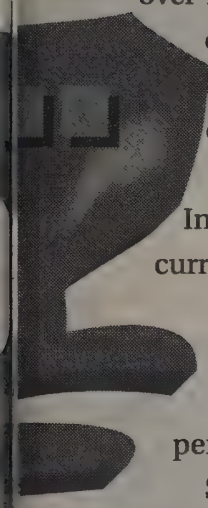
The way that started was that an employee came to me almost three years ago now, and said, "You know, the Silicon Graphics technical workstations are used in a wide range of applications, including military applications. Well, I think because of the military uses I want to leave the company and go do something else."

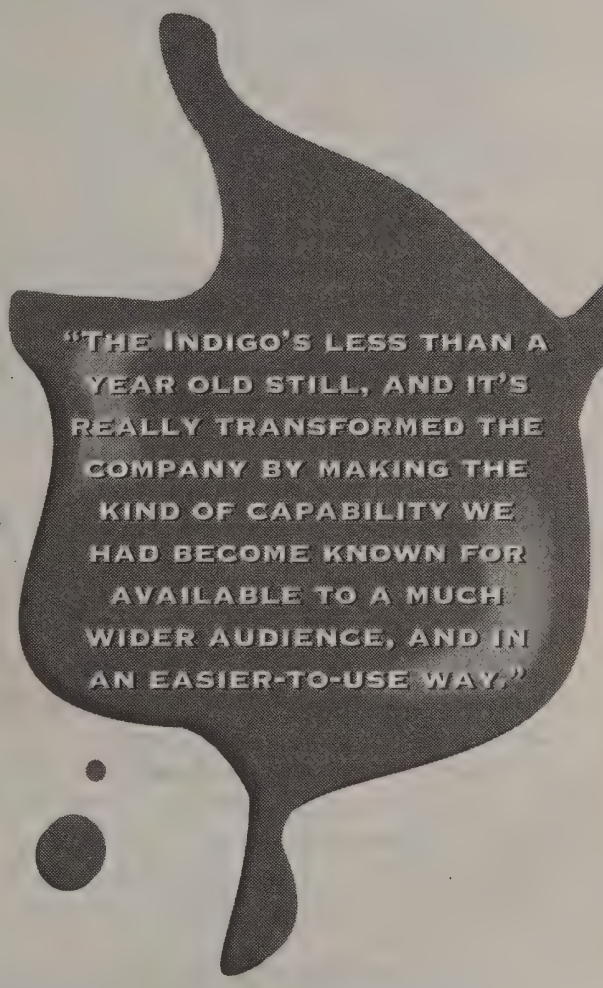
We talked a while, and I said, "Instead of leaving the company, why don't you stay and help us change the mix of our business toward other marketplaces?"

He decided to do that, and stayed a couple of years, and then another person took over. They developed this program called S.A.V.E., Scientific Analysis and Visualization of the Environment, and Jacques Cousteau got involved at one time. So a lot more of our business today goes to environmental scientists. We've developed a demonstration center here, we've provided equipment resources for it, we put some people in it, and they're developing the environmental sciences marketplace. It's been a real success story for us. So that's where that came from.

It's just part of the style here that people get involved in things. Our people are real active people, and one of the things we really believe in here is trying to create an environment where people can trust their personal interests and their own common sense, and they can bring that to the job and be passionate about it. That means that our people are going to get involved in some really fun, off-the-wall things, and that's fine.

The kind of people we sell to, primarily, are innovators. They're people who are willing to consider something other than the standard commodity product. You want a standard commodity product, buy it from




"THE INDIGO'S LESS THAN A YEAR OLD STILL, AND IT'S REALLY TRANSFORMED THE COMPANY BY MAKING THE KIND OF CAPABILITY WE HAD BECOME KNOWN FOR AVAILABLE TO A MUCH WIDER AUDIENCE, AND IN AN EASIER-TO-USE WAY."

somebody else. That's not who our customers are. Our customers are people that want to do something different, that want to do things better, that have some competence and passion about doing it.

Certainly seems to work.

Yeah, it has worked. Our company has been really successful since the last time we talked. It's been many years, but our momentum is very, very good.

Probably the most exciting thing that's happened in the last year is the Indigo, of course. It's less than a year old still, and it's been a product that's really transformed the company by making the kind of capability we had become known for available to a much wider audience, and in an easier-to-use way, with some digital media added. It's been a real success story, and I think our unit volume has increased by something like a factor of three since it's been introduced.

Can you tell who's buying them, in contrast to your traditional markets?

Well, certainly the biggest market for Indigos are the same companies, the same institutions, the same organizations that were buying our other stuff, but as the visual applications have become available, they wanted to move from two or three systems to fifty or a hundred. Those have been the biggest customers.

Beyond that, though, we're selling quite a few systems over our telesales network in the US. About nine months ago we put in a telesales group here, and about 10% of our US sales now are going over the telephone. Which is pretty dramatic in nine months.

To say nothing of pretty uncommon for a workstation company.

I think so. A lot of that business, I think, comes from a company that's familiar with Silicon Graphics, and just finds that that's the easiest way to order.

So you'd say that a lot of the people who use that channel are repeat customers.

A lot of them are, but there's a lot of new customers also. It's a combination. As time goes on it's going to move over into new customers a lot more, but we're able to develop our databases and our approaches and style and so on with a lot of our current customers as well.

What we're trying to do is increase customer satisfaction with our current customers, by providing an easier channel to get stuff. But at the same time we can beef up our total marketing to find new customers.

We're selling a few of the Indigos to professionals out there in small offices—architects, other types of people—but we're also selling a few of them into the digital media world, just as digital media devices.

As you know, in the digital media world, our objective was not to do that as much as it was to make those capabilities available to everyone, and to have them become standard features of all workstations. But in the process, if we sell a few systems to people that are just concerned about video and sound, that's fine too.

It seems that as you expand in these new markets, you get into a lot of cross-licensing, QuickTime being one of the most recent agreements. This is a new world for you—where does that fit into your plans for the future?

It is a new world for us. And we are certainly the technology leader in that field. But it's a chaotic world right now, and the more we can work with others to set standards, the better off we are. And of course Apple is a standard-setter in that environment, and if both companies can be working with common video formats and ways of doing things, it's great.

Apple seemed to be enthusiastic about it, and we're enthusiastic about it, and it just seemed like a way we could work together without getting in each other's way a lot either. It's not that we have this intense deep relationship with Apple—we don't. But we're able to share a common view of a certain few things, and it'll work out great.

Even more important from our standpoint—a lot of our customers are growing up from Macintoshes. And that's good.

What do you mean, growing up?

There's a lot of different things. The Macintosh was the computer of the '80s, and the more innovative kind of customer bought into the Macintosh idea pretty quickly. I know I did—I've been using Macintoshes for ten years—and I'm sure you did as well. We spent ten years using a Macintosh; the ten years before that I spent using minicomputers.

A considerable paradigm shift.

Very, but it was wonderful. And the next ten years I'm going to be using Iris workstations.

That paradigm shift may not be quite as much, but certainly a paradigm shift away from flat images and lots of text, which is what the Macintosh is all about, to our kind of visual computing, with moving color images, three-dimensional objects, and great sound and video, is, I think, as significant a paradigm shift as the shift that we went through from minicomputers and time sharing systems to Macintoshes.

That's part of the growing up process, I think.

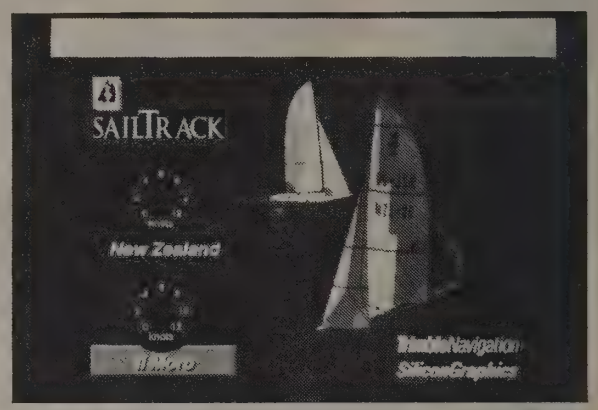
In addition to that, I think a lot of the real power Mac users, and power PC users as well, have big ideas about what they can do with their systems, and their systems just can't deliver it today.

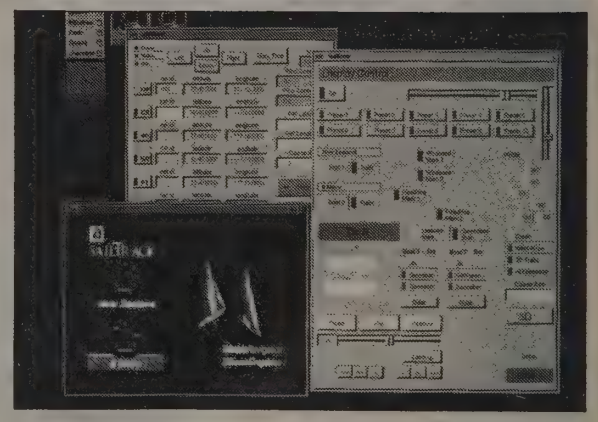
One of my beliefs is that there's a tremendous acceleration in what we can provide at a certain price in terms of compute performance. In the 1980s, you could make a ten-times difference in what a computer could do at a given price about every seven years. And now you can do it every three and a half years.

And I've felt that when you can make a hundred times difference in what a computer can do—two of those ten-times changes—then the fundamental paradigm shift has to happen. If you think about it, the Macintosh paradigm was put together in 1982, and since then we've made a hundred-times change in what hardware can do at that price, and we're ready for new paradigms. It'll be interesting to see if the new paradigm will come out of our UNIX environment or whether you can provide enough power to the Macintosh to move into the new paradigms as well.

But those applications packages that were written between 1982 and 1986 are at the end of their life, and

"THE KIND OF PEOPLE WE SELL TO, PRIMARILY, ARE INNOVATORS. THEY'RE PEOPLE WHO ARE WILLING TO CONSIDER SOMETHING OTHER THAN THE STANDARD COMMODITY PRODUCT. YOU WANT A STANDARD COMMODITY PRODUCT, BUY IT FROM SOMEBODY ELSE."





Using a satellite-based tracking system called SailTrack, Silicon Graphics workstations provided new perspectives on the America's Cup races.

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those are the packages that most of us have used on Macintoshes. Anybody that's writing applications software today, I think, is absolutely brain dead if they write application software that does not assume the standard presence of sound and the presence of color moving images.

You have to assume that when you write application software today, or your software's obsolete the minute you write it. Because all of the new PCs and Macintoshes and Irises and other things, by the mid-1990s, are going to have all those capabilities standard.

Do you think individual, relatively low-end users will be using parallel processing anytime soon?

Yeah. But I don't think you should have to care about it.

The software should just know it's there...

It should just know it's there and deal with it. I think it just fits into this ten-times difference every three and a half years.

So do I think you're going to use a computer that's ten times more powerful than what you use today in three and a half years? Absolutely, because it's going to be there, and it's going to be the right price, and it's ten times more powerful, and it's going to let you do a lot of neat new stuff. So yeah, you'll use it.

If it happens to be a parallel processor, that's great, but you won't have to know about that. There's no reason to expose that to a user.

It's the application developer who has to worry about it.

Right, and we've had lots of experience here at Silicon Graphics with our high-end systems, with symmetric multiprocessing in the operating systems area and the compiler area to make sure people can write applications that the user doesn't have to worry about.

The easiest way is to take one application and put it on one processor and another application and put it on another processor, but you don't have to be that simplistic even. You can provide a lot more power than that in parallel processing in the way we do it—even within an application, spreading it across the processors.

But that's our job. That's the system's job. It's not the user's job to do.

I don't see any stop to at least being able to speed computers up by a factor of ten every three and a half years. You can kind of visualize four or five of those jumps, and four or five of those jumps is ten to the fourth, ten to the fifth...

It's taking you into something you can't even visualize, really.

Well, but that's the point. A lot of that power's going to be used up in visualizing, because when you switch to visualizing images and trying to deal with people as they are in real life, you use lots of power. That's where it gets used.

Moving out from that a little, there's a lot of talk from the phone companies and the cable companies about supplying all kinds of digital information to the home. Do you see your technology playing a part in that?

We're very much believers that over a five- to eight-year period of time, the kind of technology we use today in the office will move into the home.

[SGI chairman] Jim Clark will be talking about the telecomputer at SIGGRAPH this year. He'll be talking about the functionality that will be needed on both ends of the fiber into the home. We believe that you'll need the kinds of graphics capability that we have today, and we believe that you'll the kind of audio and video capability, as well as the ability to handle the TV kind of signals that everybody else is talking about.

So there's no question that the technology we're dealing with today, with the power user, is going to flow into the home over a five- to eight-year period of time. And fiber optics into the home will be one of the enabling technologies.

Of course that involves the absolute integration of image processing, computer graphics, great digital sound, and video. The absolute integration of all that into a common operating platform.

We're really believers that all that gets tied together in an easy-to-use fashion, so that the average user can operate on video, sound, graphics kinds of things, easily and conveniently, much like you operate on a spreadsheet or text today.

Do you think things like the Photo CD, essentially enabling people to go to K-Mart and get their photos back on CD-ROMs, will have much impact on your business?

Absolutely. I think the ability to go out and take a bunch of pictures and hook them up to your computer and bring them up onto the screen in a window—enhance the images, and string them together with sound, lay them into a video, perhaps, of multiple images strung together, or even to use them as a texture map on a three-dimensional object—is all just normal stuff. It's normal stuff.

When you talk about these kinds of things, it starts to sound like blue sky. But around here it isn't, because we're dealing with the kinds of users out there that are willing to pay, at the present time, $10–30,000 to do these kinds of things. So we're doing real things with real customers today; but in the meantime we're learning the necessary disciplines, so that we're moving down the learning curve so we can start to provide these capabilities on $5,000 systems, or less, in a way that these capabilities are accessible to real people.

What's the deal with ACE and NT and MIPS?

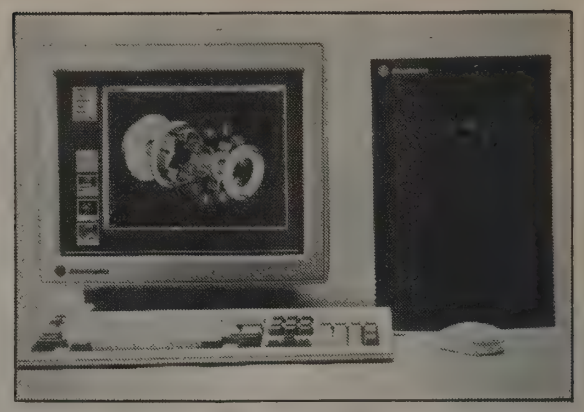
That's a complex question!

It's a very complex question. Feel free to break it down into smaller chunks!

First let me talk about MIPS and the merger. First of all, we're doing this interview in late May. At the present time we've just put the merger proxy out on the street, people take a vote on it, and that's it. It's full of every possible negative thing about the merger you could imagine so we could be legally safe.

So please don't read it! *[laughs]*

That's got to be out for a month, and then we'll take a vote in late June. We hope to have the merger complete by the end of June, and start our new fiscal



Since its arrival last year, the Iris Indigo has been turning up in traditional Mac and PC markets.

"WE DON'T MAKE A LOT OF MONEY ON CHIPS. SILICON GRAPHICS AS A COMPANY MAKES ITS MONEY SELLING GREAT SYSTEMS. WHEN ACER BUYS A CHIP FROM NEC, WE GET A LITTLE ROYALTY, BUT WE'RE NOT GOING TO GET RICH ON THAT. IT'S SO SMALL AND SO INSIGNIFICANT THAT THE SEC WON'T REQUIRE THAT WE REPORT IT."

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year in July as a new company.

There are some people who say you're paying way too much for MIPS. Obviously you don't agree.

No, I don't. I don't agree. But those people tend to be either the people that read the press, or they tend to be the people that view MIPS as a business.

And we don't. We view them as a technology. This strategic technology asset—of being five or six or seven years down the learning curve in terms of RISC microprocessor development, with tremendous support from the world's most advanced semiconductor fabrication facilities, primarily at NEC and Toshiba, but six different companies—is just a tremendous asset. That's worth a lot to us, and we think it's a fair price.

We're adding this fourth strategic asset to our company. The technology strategic assets we have are visual computing, digital media, symmetric multiprocessing, and now, RISC CPU development itself. So it's this fourth strategic asset that we're buying with this merger.

It's really important to the computer industry in the '90s. It's how we get this order-of-magnitude change over three and a half years, through really intense development of new microprocessors. We think it's central to our activity, and we're very, very excited about it.

July first is when we really get going as a merged company, and we're spending a lot of time now going through the organization, and trying to figure out who works for who and how it all works. The key to all that is that we'll be setting up a microprocessor design and marketing organization called MIPS Technologies, that will be a separate unit of our company. This organization will have the responsibility for designing competitive microprocessors.

We'll be beefing that organization up, adding more financial strength, more funding to do more designs, to stay at the leading edge of the marketplace.

A more difficult part of the merger is merging the MIPS systems business into the Silicon Graphics systems business, because obviously over time it doesn't make sense to have two different systems product lines. So we'll be working together with the MIPS people to merge that into one product line as time goes on. In the meantime we're continuing to produce the MIPS systems for MIPS customers, and we'll be supporting them for years, as you'd expect.

The real change in Silicon Graphics is the addition of this new strategic technology asset of microprocessor development, where we're entering not at the beginning of the learning curve, but five or six years down the learning curve.

Not long ago I was talking to Stan Shih from Acer, who was talking about their parallel processor machines that use MIPS chips. Where does all this leave the relationship with all of MIPS's other chip customers?

The first thing to understand there is that Silicon Graphics, as well as other MIPS customers like Acer, don't buy their chips from MIPS. They buy them from NEC or Toshiba or IDT or LSI Logic or Performance Semiconductors. So neither Silicon Graphics or MIPS are in the semiconductor business, in terms of selling chips.

We don't do our own fab, but we also don't do our own chip marketing. We just license the chips to NEC, and they go out and sell them. So an Acer buys the chips from NEC or Toshiba or somebody.

That's one point. The other point is that in the design of these microprocessors, it's very important that we take into account design ideas from the other systems companies. I think there's somewhere like ninety different systems companies that are using the MIPS architecture, probably more than any other RISC architecture in the world. Probably more than any other architecture except for Intel. So it's very important that we take those design ideas into account.

Just to make our willingness to do that visible, we're putting together something I think we'll call the steering board for MIPS Technologies, which will be made up of about ten different people throughout the industry, from semiconductor companies, the operating systems companies, and the systems companies, that will have a certain amount of oversight responsibility for the R&D program at MIPS Technologies, to make sure that we're going to keep the architecture open. They'll report back to the board of directors of Silicon Graphics on an annual basis, as to how we've done in keeping it open.

So it's got some teeth in it, and I think it will influence our engineering managers to make sure that we take into account the needs of the entire industry.

We don't make a lot of money on that. Silicon Graphics as a company makes its money selling great systems. When Acer buys a chip from NEC, we get a little royalty, but we're not going to get rich on that. In fact, we'll never report it, it's so small. It's so small and so insignificant that the SEC won't require that we report it.

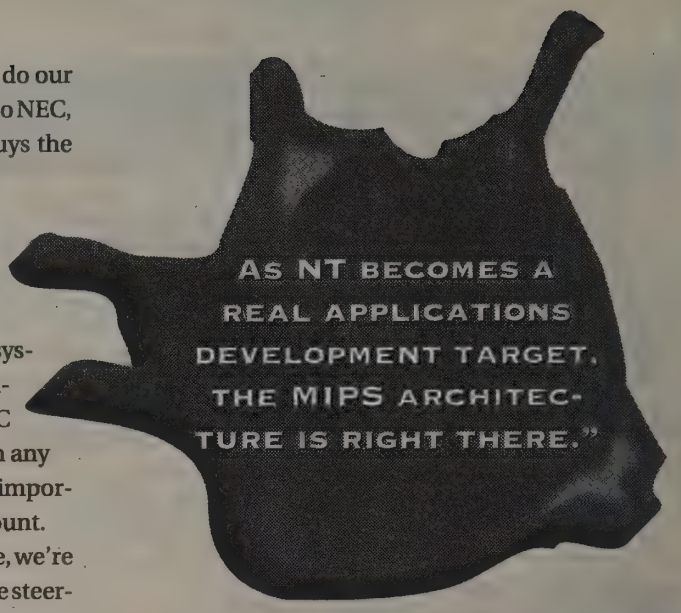
The way we make money is on systems, so the question is why do we even want to keep it open? Well, that gives us access to the very high-technology fabrication facilities in places like NEC and Toshiba. It creates volume for the product, which creates lower-priced products. And having access to those fab facilities allows us to create very high technology products also. So there's a whole set of things that can happen, when you can work in a group of companies like that, that are better. And so we're very committed to having an open approach to the whole thing.

How would you differentiate what you've got with the MIPS chip from what Sun's got with SPARC?

Well, we have many more systems companies than Sun does, and that helps. We have more semiconductor companies than Sun does.

There's a little difference in our relationship in that it seems that Sun's strategy is to say, "Okay, here's the general architecture; go out and design a chip, guys..." And then Cypress designs a chip, and TI designs a chip, and they compete for Sun's business. One of them gets it, and the other one doesn't.

Our approach has been a little different from that—to do a design ourselves, and to license the design to multiple semiconductor houses to produce it. It's the same design, the parts are exactly interchangeable. So you can buy an R4000 from Toshiba today, or you can buy an R4000 from NEC, and they fit in the system the same way. They're competing with each other for our business and everybody else's business. That



seems to me to be a little bit more straightforward, and perhaps a little bit more responsible.

I think the other big difference is the support we're getting from Microsoft, of course, with the NT development program. As NT moves into the market and becomes a real operating system and a real applications development target, the MIPS architecture is right there. That's not true in the case of Sun.

What about NT? NT is not your standard operating system now...

No, it isn't, but our company will be marketing systems with UNIX, and we'll also be marketing systems with NT. So we're working very closely with Microsoft in terms of Silicon Graphics labeled systems, as well as working with Microsoft to make sure that other companies that use the MIPS architecture within systems have it optimized with the NT operating system.

Would it be correct to think of NT as being the unifying factor of ACE right now? There's so much conflicting conventional wisdom about ACE right now that I'll admit to being as confused as the next person.

I feel like the real thing that's happening is that the MIPS community is divided into two sets. There are the people that are really active in the UNIX client-server world, and then there are the people active in the Microsoft world. There are two quite different groups of objectives, and we're involved actively with both groups.

Certainly for the people involved in the Microsoft world, it is Microsoft that's the unifying element, and the idea of developing an alternative to Intel in the PC world.

That's not everybody that uses MIPS. Almost all the MIPS chips that are used today are in the other world, the UNIX client/server world.

So what do you see as the role of ACE at this point?

Well, I think it's a good thing to have. We've tried to narrow the focus into some short-term objectives. The short-term objectives have been to develop what's called an ARC specification—a hardware spec for what a MIPS system should be to be able to run an industry standard operating system. So the ARC spec is out and complete, and multiple vendors have now started shipping ARC systems.

I think the other real objective this year to develop

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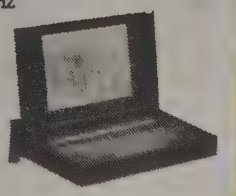

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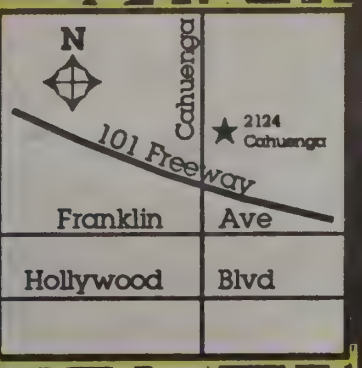

is to get those ARC systems working well with NT, and to deliver them with NT before the end of the year. And then a third objective is to do the same thing with a relatively standard UNIX.

Those are all 1992 objectives. They're all short-term, and they're all going to happen.

What distinguishes the UNIX side from the NT side, in terms of who the customers are and what they're trying to do?

That's something we could all talk about—what's the difference between UNIX and the new operating systems like NT? A lot of it is background and history and culture, and so on.

Like it or not, the marketplace has divided itself up into a marketplace that's grown up out of the MS-DOS world, and another marketplace that has grown up out of the UNIX world. There is an overlap—it's not as large as people believe it is, but there is an overlap. There's another overlap with the Apple community, of course.

I don't think you can define carefully, in any logical, rational way, what's an NT market and what's a UNIX market. Certainly the UNIX world has grown up more out of the technical, science and engineering environment, versus the PC world, which has has grown up more out of the general purpose user environment. So there are some differences there, but just how that breaks up I don't know. I think it's going to be something of continuous debate in the computer industry for the next five years. We'll see what happens.

In the meantime I think there's a lot of opportunity for a lot of customers and a lot of computer companies to make a lot of money in both markets, and the computer industry's big enough now so that everybody doesn't have to use the same operating system.

And I think it's unrealistic to believe that everybody will. There is a feeling among some people that there is this universal computer, and the idea is for the hardware vendors to make a universal computer, and then all the software people could write for it, and everybody could live happily ever after.

There is a lot of thinking like that, and frankly I think a lot of the issue relative to ACE was that many people felt that ACE was that answer, for the universal computer. There is that certain thought in ACE, but that's not going to happen in a marketplace where you can change a computer in terms of performance by a factor of ten every three and a half years. That necessarily produces some degree of chaos.

I think the computing world will be a little chaotic over the next ten years, with a lot of innovation on the hardware side, which is going to create a requirement for the application software people to write new software.

I think almost all of the software used in the PC and Mac marketplace today will be obsolete in less than five years. And that has to scare every software vendor in the world—except the ones that don't know about it. The smart ones are just figuring it out right now, and we're seeing a lot of new, really innovative application software being written. It's just happening in the last year or two.

Obviously you guys are on the RISC side of the RISC/CISC dichotomy. What is your thinking on that, at this stage of its evolution? The world has changed since we discussed this three years ago...

[laughs] It has, but we haven't changed our view. In the workstation world, we compete against HP, IBM, Digital, and Sun, and there's no one who believes we could compete against those people without a RISC processor. They all have RISC processors, they've all bet their entire strategy on it in the performance end of the marketplace. That tells me what we all already know is true, that RISC processors are higher-performance, given the same semiconductor process and the same period of time.

No matter what Intel says.

So that's a truism, and we're pleased to be involved in the RISC world. It's a necessary technology, and RISC systems, given the same-technology semiconductor fab process, are faster. And they aren't more expensive. So RISC processors give the customer better price/performance, and will, on a continuous basis for the next five years. And Intel's going to try very hard to keep up, and keep as close as possible, but it's not going to work.

Now the issue is going to be, as long as Intel comes within a factor of two or three of RISC performance at a given price, will that keep their current customer base and the current systems activity? There's so much momentum in the PC world that that may be close enough. But they're not going to be able to equal RISC performance. The question is, can they get close enough so that people won't move away from PCs and into workstations?

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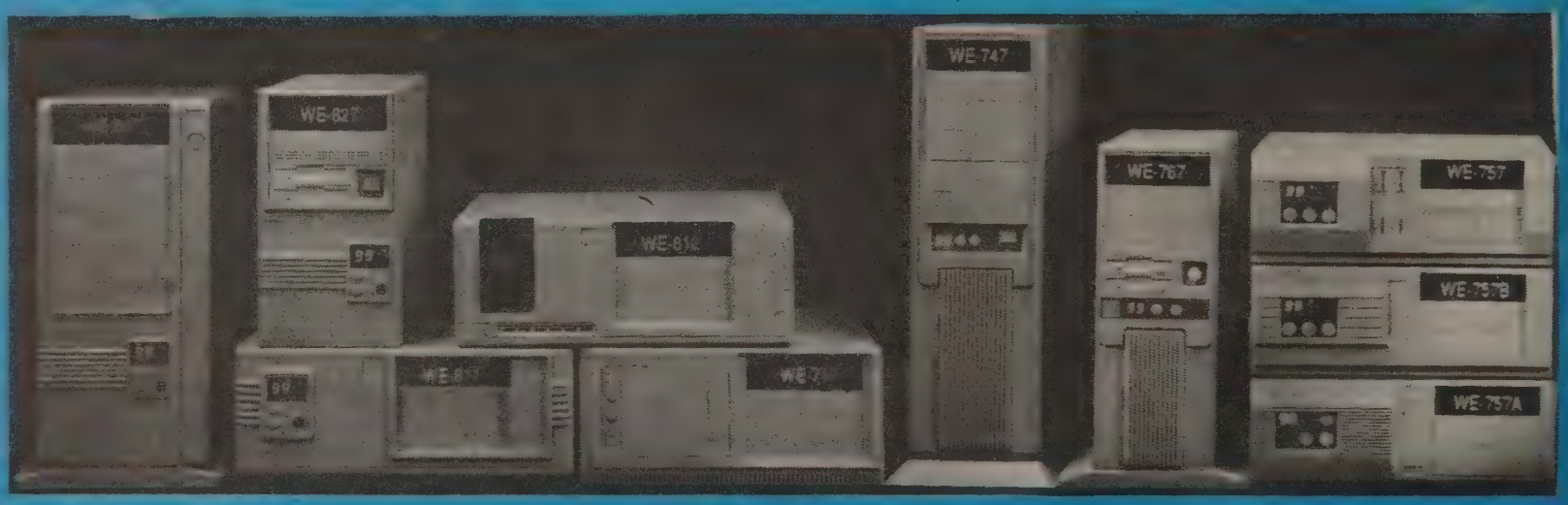

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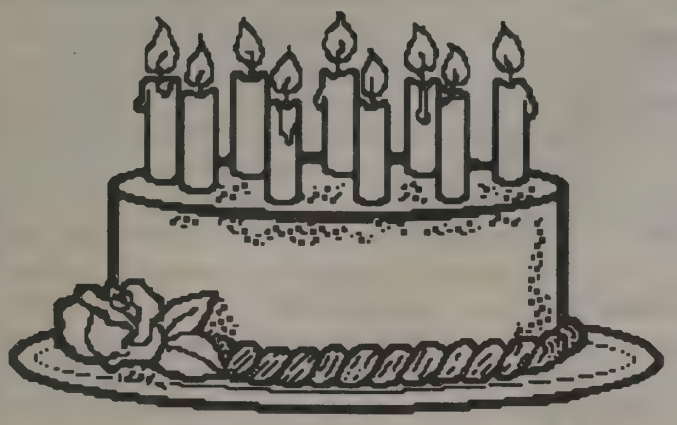

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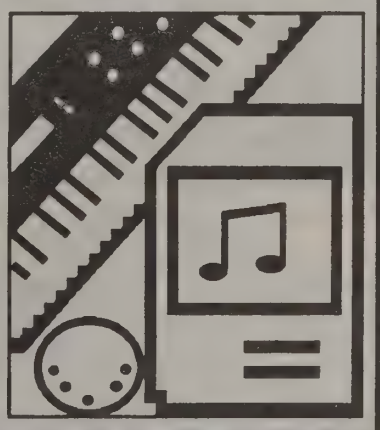

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Assuming ACE worked according to the ideal plan, is the idea that people would come in from the PC side, basically hit the performance wall, and be able to move their apps over onto RISC workstations without the trauma that they would have today?

I think that's the Microsoft strategy, and Microsoft will provide a way for that to happen, yes.

That will happen in some cases. In others, companies will develop new innovative software development programs, and they may decide to write their software for UNIX platforms, because of the power of RISC processors. I think that some people will stick with the Microsoft operating system, others will use UNIX.

Both will happen, both will be successful.

We're starting to see software from vendors like Quorum that allow Mac applications to run on workstations. Do you see that as essentially a transitional and short-term thing?

Wasn't it great to see that demonstration? The performance? Just how much faster an Iris is than a Mac even in that mode?

What a lot of the new software relates to is new ways of doing things, and new applications. And a lot of the people out there are going to continue to do things in old ways for some time.

But this is a way to get that new performance with the old paradigms, and that's important too. It's especially important as a transition program.

We have this program inside Silicon Graphics called Move Over Mac. We started out with about a thousand Macintoshes in Silicon Graphics, because we're the kind of innovative users that use Macintoshes. Over the last two years we've been gradually getting rid of them and switching over to Iris Indigos. But in doing that, it'd be nice to have some kind of way to run some of the old software in the process. It appears that the approach by Quorum is an excellent way to do that.

Time will tell, but I think as early as the fall, this kind of software can really be available on Irises.

Off in the fringes of the workstation universe is NeXT. Where do you see that fitting in long term?

The world doesn't have very many computer companies left that are defining platforms. Really trying to figure out how people want to use computers and defining a platform of software and hardware to provide that. Silicon Graphics is one of them that are still doing that, and I admire the fact that Steve Jobs is also doing that.

Steve is trying to define a new platform. So many companies today are just copying what other companies do, and cloning them. It's nice to see a company that's willing to do the hard work, of really defining how people are going to use computers and trying to design a platform that fits their needs.

Whether it does that or not is another story. Frankly we haven't focused on it a lot; we don't compete with NeXT a lot. We've been focused more on our own customers and how to serve their needs better. Again, I think we're caught up there in the RISC vs. CISC wars—we really believe in high-performance RISC processors, I think the NeXT machines tend to be very low-performance machines compared to what our customers want. But you admire the fact that he's doing some good stuff there, and it is a new kind of platform. It's through experimentation and new ideas that things happen.

Do you see most of your future growth as being at the high end or the low end?

Certainly the low end of our market is growing faster than the high end. Our high-end business is very important, but the reason the high-end business is very important is that at the high end we deal with the very best and brightest computer users in the world. They love us, and we have a very high market share at the high end of our business.

We deal with the people at Lucasfilm and Sony Tri-Star and NASA and Genentech; in a wide range of industries, we're dealing with the very top people. And that's where we experiment with new ways of doing things—new graphics features, new ways of developing images, new computing techniques, and so on.

And then once we get it right at the high end, in less than three years we can have it available at less than $10,000. So it's a tremendous advantage to us to be so strong at the high end.

But the high-end market is not growing as fast as it once was.

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They do, in today's economy. And also, frankly speaking, a lot of our high-end business was Defense

continued on page 112

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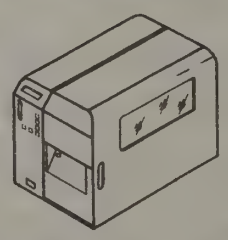

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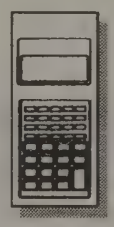

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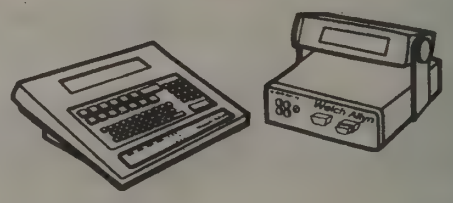

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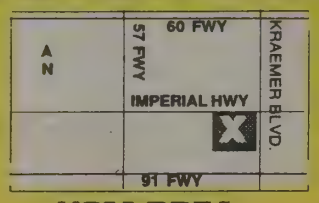

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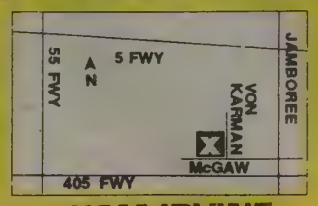

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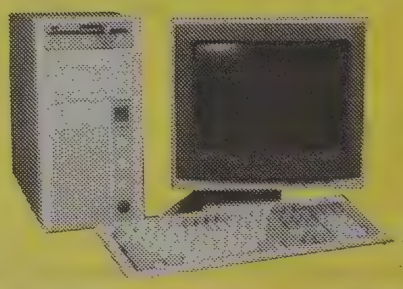

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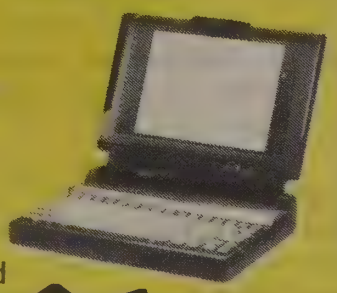

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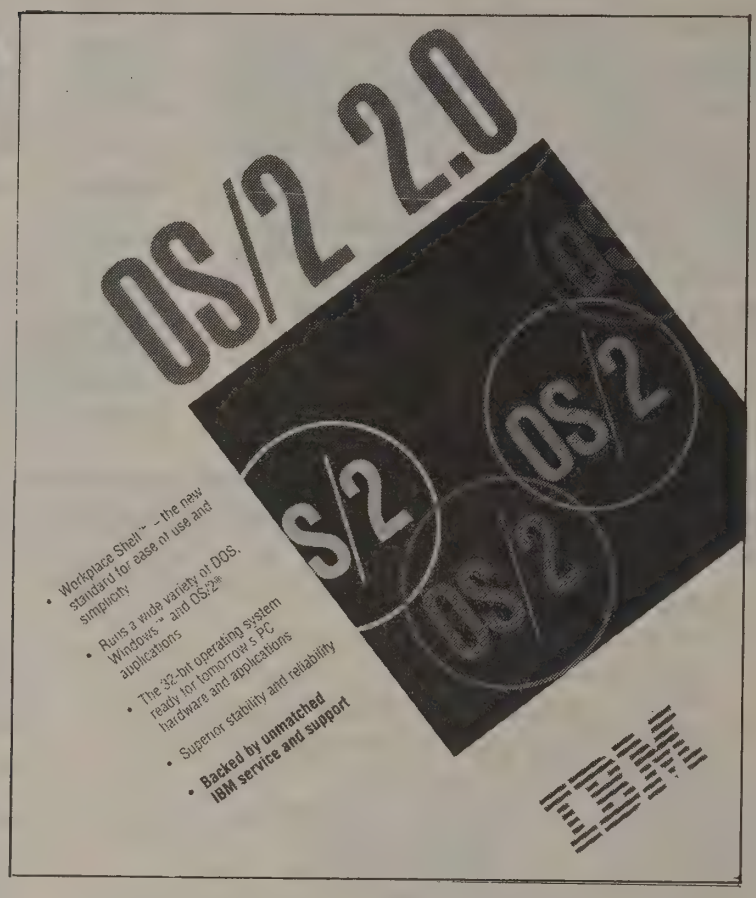
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I write this with very mixed emotions. Anyone who has seen my many online postings in the last few months knows that I've been bending over backwards in favor of IBM and OS/2 v2. I really felt that a "real" multitasking operating system's inherent advantages over Microsoft Windows were a compelling reason to keep our minds open and give IBM a chance. I did, waiting for a final release of OS/2 before trying it.

Well, OS/2 is technically better, but still very disappointing.

One might expect the next line to be, "You gotta give IBM some credit for trying." But you don't, because they didn't try very hard in most areas other than in the programming code itself. IBM is treating OS/2 2.0 like a mainframe product: they'll sell it to you, but small users can't get very good service. Of course, on an operating system as big as OS/2, service is very important. Many parts of OS/2 don't work right; IBM doesn't know why, and doesn't know when they'll be fixed.

Given OS/2's dark-horse position, IBM needed to go the extra mile to get the attention of The Average Buyer. They didn't. Instead, they targeted OS/2 2.0 almost exclusively at their current mainframe and minicomputer users, who are familiar with waiting days and weeks for responses to help requests. Most IBM corporate customers have in-house help facilities; when a problem arises, users must consult the in-house help, insulating IBM from having to deal with mundane questions. However, when you want to sell an operating system to everyone, you'd better be ready for anything. No one ever gave Microsoft awards for their telephone support of Windows, but they have nothing to fear from IBM.

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INSTALLATION

No doubt you've heard about how much hard disk space OS/2 takes. The 3.5" version comes on *twenty-one* high-density diskettes. You actually only have to load seventeen of those for a typical full installation (the last five diskettes are printer drivers).

One of the first things you notice jammed next to the box of diskettes is a sheet of cute OS/2 stickers. Shades of the Macintosh! If you want to proudly profess your allegiance to OS/2, you can stick these on your car, on your software, and so on. After you start running OS/2, you may decide not to plaster them everywhere, though.

In addition to the big box of diskettes, there are over a dozen small books, pamphlets, and miscellaneous sheets. Ominously, the small book titled *Installation Guide* is the fattest. In fact, it is longer than the *Using the Operating System* book. Not a good sign. The good news is that if you plan to run OS/2 on a system that already has MS-DOS and do not intend to run other operating systems such as UNIX, the installation process is straightforward. This is called "Adding OS/2 2.0 to a DOS System (Dual Boot)," not to be confused with "Boot Manager," which requires much more work.

The installation went quickly and easily. The questions asked were fairly direct and easy to answer. (One humorous note is that you must do the installation from your A: drive. If your system has both 3.5" and 5.25" drives, you must be sure to get the OS/2 for the type of drive you have as A:.) After the installation, I had a surge of confidence in OS/2. IBM clearly put a great deal of effort into getting the installation process right.

If you have lots of hard disk space free, you should install any feature that you want from the very beginning. You can add items later, but you will discover that the setup program is fairly brain-dead: you have to insert each of the last eight diskettes, even if what you are adding is only on one of them. My initial favorable impression of the installation program was shot down by this one. Clearly, IBM had not tested this thoroughly.

IBM is treating OS/2 2.0 like a mainframe product: they'll sell it to you, but small users can't get very good service. Of course, on an operating system as big as OS/2, service is very important.

DRIVER PROBLEMS

A surprising number of hardware add-ons for PCs require *drivers*—software that makes MS-DOS know how to deal with the hardware. Many software programs are installed as drivers, usually in your CONFIG.SYS file. OS/2 v2 requires drivers as well, but IBM did not spend nearly as much time on getting drivers for OS/2 as it should have. This glaring omission made me realize that OS/2 came from the same "It isn't important if it wasn't invented

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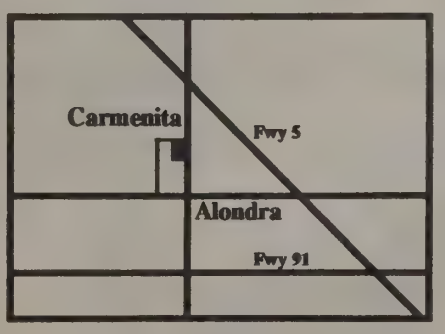

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here" attitude as the PCjr.

Millions of people use disk compression programs to save space on their hard disks. The most popular, such as Stacker from Stac Electronics, are installed as drivers and control the way programs look at your hard disk. Unfortunately, none of them supports OS/2 yet. Stac says it will have a version of Stacker for OS/2 by the end of this year, but that leaves people who are already using the MS-DOS version unable to access their files under OS/2. Other popular hardware, such as printer redirectors, also doesn't work under OS/2.

You might think of blaming Stac for this tardiness, but it is really IBM's fault for not supporting developers earlier with OS/2 development kits and even programming expertise. If IBM had pushed the important companies towards OS/2 last year instead of waiting until it was released, companies like Stac would have had drivers ready to go.

Even worse, many of IBM's own hardware drivers don't work well. For example, I have a SCSI drive for my PC in addition to the PC's internal IDE drives. Although IDE drives are by far more popular for consumer PCs, SCSI drives are very popular for high-end systems

There are dozens of irritating flaws in OS/2. Although none of them is fatal, they all point to the fact that IBM was primarily thinking about corporate users, who have a computer support and training staff to smooth out the wrinkles for them.

such as network servers. I use the major brand of SCSI controller (Adaptec) and the major brand of SCSI drive (Quantum), and have never had any problem with the drive under MS-DOS.

After I started OS/2 v2 the first time, I noticed that it did not recognize my SCSI drive. I assumed that it hadn't installed the driver during the automatic installation and that I might need to do it manually. I opened the Master Help Index, searched for SCSI, and found no entries.

Disheartened, I called the 800 number for customer service. I did get through to someone within a minute (as compared to the normal fifteen-minute wait on a toll call to Microsoft), but the scene turned very dark very quickly.

The woman asked for my customer number. I said I didn't know what it was and asked where I would find it. She didn't have a clue. I told her I just bought OS/2 and had looked everywhere for any serial number. She said she couldn't take my problem report without a customer number. I asked again where to find it and she put me on hold so she could ask. When she came back she said that it should be on the box. I was looking at the box and told her, no, there was nothing personalized there. After another few minutes on hold, she said she would take my name and number and a description of the problem and someone would get back to me. When I told her I was having a problem with a SCSI drive (and I spelled it out), she said she had never heard of a SCSI drive.

No one called back. I needed to get the review written, so I pulled some strings with the PR agency that sent me the copy of OS/2. Within a few hours, I was talking to a customer support programmer. I told him that OS/2 didn't see my SCSI drives and I didn't know what to do. He said, "I've never used a

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SCSI drive before. Are you using an IBM SCSI drive?" No, I replied, I'm using a controller from Adaptec. "Have you tried calling them?"

It was starting to look bleak. He asked if I had looked in the READ.ME file, which I had not. Lo and behold, there was information in there about Adaptec SCSI drives, indicating that I had to install the driver myself. The person at IBM hadn't read the READ.ME file either, and had little understanding of the steps outlined.

To make a long story short, it turns out that the OS/2 installer had already installed the SCSI driver, but it didn't work. One out of every five times that I booted OS/2, it would see the SCSI drive, the other four times it wouldn't. The customer support person promised to find more information on why this was, but couldn't.

THE USER COMES LAST

The problems I had with IBM's customer support are typical of the old IBM attitude that the corporate customer wants their product, so they don't need to support the individual customer very well. The shocking idea that I didn't have a customer number boggled the first customer support person's mind, but the prevalence of this attitude is clear even if you have no problems installing OS/2.

When you want to sell an operating system to everyone, you'd better be ready for anything. No one ever gave Microsoft awards for their telephone support of Windows, but they have nothing to fear from IBM.

Windows 3.1 has lots of little features that many of us take for granted, at least until we run OS/2. There is no screen saver in OS/2. Many people like to arrange their icons in a particular orientation on their screen; if you accidentally choose to sort the icons in OS/2, there is no way to undo the change. Even the interface on the Dual Boot program, the one that lets you also boot under MS-DOS if you want, is incredibly cumbersome. If you run it with no arguments under MS-DOS (which you might, if you couldn't find the documentation for it), the program gives you an error message in IBMese instead of telling you what you want to do.

There are dozens of other irritating flaws in OS/2. Although none of them is fatal, they all point to the fact that IBM was primarily thinking about corporate users who have a computer support and training staff to smooth out the wrinkles for them. For instance, the first time you double-click on the icon for a Windows program, instead of running the program, OS/2 gives you a "C>" prompt. After about ten seconds, the program runs. Until then, however, you have no idea what you're supposed to do. I tried typing at the prompt, but got nowhere.

This is not to say that OS/2 2.0 is unusable, just unpleasant. Microsoft has nothing to worry about from IBM here. Any advantage that IBM had by getting OS/2 2.0 out ahead of Windows NT was squandered by its lack of understanding of the average PC user. Even the software companies that created OS/2 programs are upset at IBM for not helping them market their software to OS/2 users: IBM didn't even invite many of them to the OS/2 release meetings.

If IBM continues to treat its customers and suppliers like this, Microsoft can turn out even more mediocre software and still dominate the operating system industry easily. ■

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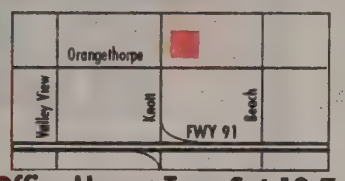

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PRODUCT UPDATES

- **CE Software** announced **QuickMail 2.5.1**, a maintenance release to QuickMail 2.5. CE Software, Inc., 1801 Industrial Circle, PO Box 65580, W. Des Moines, IA 50265. (512)224-1995. MCI Mail: CESOFTWARE. AppleLink: CESOFTWARE.
- **Cognos** announced **Impromptu 1.1**, a new version of its desktop SQL query tool for Microsoft Windows. Cognos, Inc., 67 S. Bedford St., Burlington, MA 01803-5164. (617)229-6600.
- **Compaq** introduced a nationwide **PC battery pack recycling program**, free to all their customers. To participate and receive a pre-addressed, postage-paid battery mailer, call: Compaq Computer Corp., 1-800-524-9859.
- **DayFlo Tracker** is shipping **Release 3.0** of its **DayFlo Tracker Personal Information Manager**. Current users can upgrade for $89. DayFlo Tracker Corp., 18021 J Sky Park Circle, Irvine, CA 92714. 1-800-367-5369.
- **Enable Software** released **Enable 4.5**, the upgrade to its DOS integrated software package. Enable Software, Inc., 313 Ushers Rd., Northway Ten Executive Park, Ballston Lake, NY 12019-1519. 1-800-766-7079.
- **Keller Software** introduced **Sideview III**. Current users can upgrade for $29.50. Keller Software., Inc., 3857 Birch St., Newport Beach, CA 92660-2660.
- **Radius** announced a **trade-up program** allowing end-users who purchased an original **Radius Rocket** or **Rocket 25i** accelerator board to upgrade to a **Rocket 33**. Radius, Inc., 1710 Fortune Dr., San Jose, CA 95131. (408)434-1011 or Radius's Automated Fax Information Service, 1-800-966-7360.
- **Time Arts** released **Lumena 3.6 Update**. The new version is faster than all previous releases and includes new advanced video features for professional users. Time Arts, Inc., 1425 Corp. Center Pkwy., Santa Rosa, CA 95407. (707)576-7722.
- **Trident Software** released **InfoTrak v4.0**, its software package designed to manage inventory from purchase order to financial tracking, cost allocation, and network configuration. Trident Software, Inc., 1001 Bridgeway, #101, Sausalito, CA 94965. (415)332-0188.
- **Triton Technologies** released **CO/Session 6.02** with much faster EGA/VGA graphics and improved remote Windows performance. Triton Technologies, Inc., 200 Middlesex Trunpike, Iselin, NJ 08830. 1-800-322-9440.
- **UMAX Technologies** is offering customers of its 24-bit color scanner a **free color display card** that upgrades 8-bit color displays to 24-bit true color images. UMAX Technologies, Inc., 3170 Coronado Dr., Santa Clara, CA 95054. 1-800-562-0311.
- **Zepher Development** introduced an **upgrade program** that lets users of any other vendor's 3270 communications software upgrade to Zepher's 3270 Passport for only $99 per PC workstation. Zepher Development Corp., Summit Tower, 11 Greenway Plaza, Suite 1610, Houston, TX 77046. 1-800-966-3270.

continued on page 81

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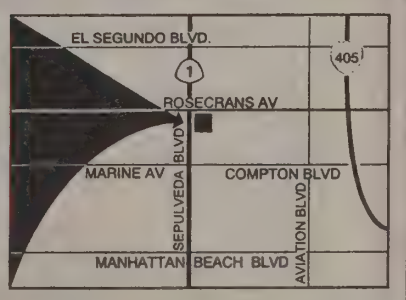

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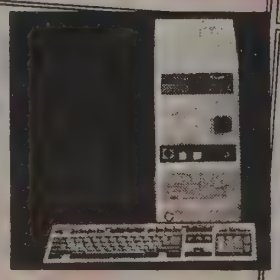

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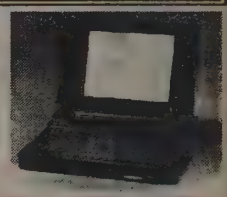

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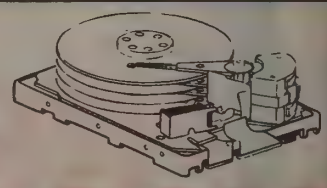

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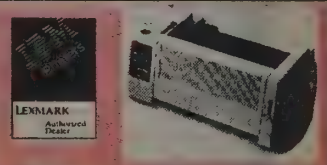

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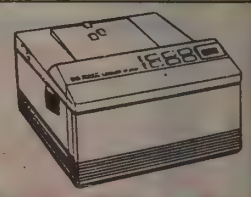

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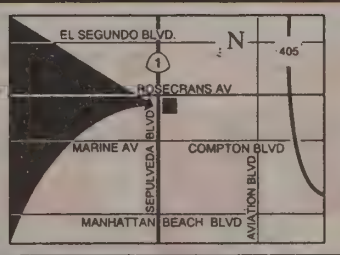

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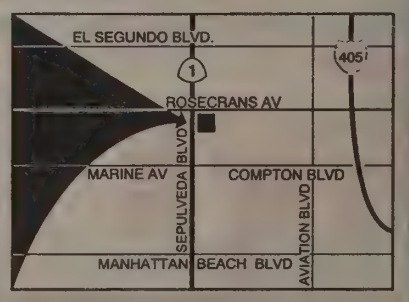

PRODUCT SPOTLIGHT

continued from page 76

subscription charges. It features a built-in television tuner with audio and video inputs that allows users to watch regular TV programs on their PC monitor by using a TV display card or connecting a TV monitor. With the Teletext Decoder installed, and connected to an ordinary TV antenna or a cable hook-up, users can receive Teletext broadcasts free of charge. Teletext consists of text and graphics information broadcast in selected markets via an unused portion of a TV station's signal known as the Vertical Blanking Interval. ($199, includes hardware card and software to capture, view, store, and recall pages of Teletext information) Domino Computer, Inc., 47853 Warm Springs Blvd., Fremont, CA 94539. (510)226-1800.

POLARIS 455

The Polaris 455i Local Bus system is targeted at the CAD/CAM and engineering market where video performance and hard drive throughput is critical to overall system performance. Based on the Intel 50MHz, 486DX processor, this system features a 32-bit video graphics adapter that offers nearly ten times the performance of conventional 16-bit, SVGA graphics technology. The standard system configuration includes 8MB of RAM, 1.2MB and 2.88MB floppy drives, a 200MB hard drive with SCSI interface, and an ultra-modern tower chassis. ($3395 with 14" non-interlaced monitor) Polaris Computers, Inc., 5702 Marsh Dr., Unit E, Pacheco, CA 94553. (510)689-2600.

IEV SIMULSCAN

SimulScan is an external VGA graphics-to-video scan converter that provides simultaneous display capabilities and flicker-free video output from VGA 640 x 480 applications, including Windows. This valuable tool for demonstrations, recording, or portable presentations enables computer-generated images to be simultaneously displayed on a television, projector, or other video device, or to be recorded on a VCR. SimulScan requires no software. Simply unplug the VGA monitor, plug in SimulScan's cable, then plug the VGA monitor and television or VCR into SimulScan. ($495) IEV International Processing, Inc., 3030 S. Main St., Suite 300, Salt Lake City, UT 84115. (801)364-2030.

MACINTOSH SOFTWARE

AFTER HOURS DATEBOOK

DateBook is a personal calendaring product that keeps track of appointments, schedules, events, to-do's, reminders, and tasks. Using System 7's Apple Events capabilities, DateBook offers integration with TouchBASE, After Hour's contact management software. This lets users access contact information in TouchBASE while adding appointments or events in DateBook. DateBook also automatically adds appointment and event information to the contact's TouchBASE record. DateBook's printing capabilities enable you to print your calendar in *f*ILOFAX, DayRunner, and DayTimer formats. ($59.95. TouchBASE/DateBook bundle has a suggested retail price of $195) After Hours Software, Inc., 5990 Sepulveda Blvd., Van Nuys, CA 91411. (818)780-2220.

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These potent processing stations easily manipulate large database programs. They deftly transmit complex networking communications. Likewise, they breeze through demanding Windows applications as well as any stationary desktop system.

The Sager NP205 and NP206 are equally at home in the office or on the road. When you're in a vehicle, run the optional car adapter/charger. When you're in an office, use the included AC adapter/charger with our optional docking station for full desktop functionality.

Our NP200 series uses a standard 3.5" hard drive format. It's easy to upgrade your system with all the capacity you need, up to 240MB !

Use Sager's optional stand-alone battery charger to charge one set of batteries while you're using the other set. You'll never have to wait for a recharge again !

Your NP200 will include robust, adaptable power management software, enabling you to extend your work-time even further. You will program the sleep mode for the hard disk, the auto screen power-off. You might even adjust your CPU speed. Alternatively, you can simply accept our built-in default values and get directly to work !

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OPTIONS :

- ▲ Additional Battery pack
- ▲ Additional Battery Charger
- ▲ Docking Station
- ▲ Car Adapter/charger

486DX-33 NP-206 $2495

386DX-33 NP-205 $2045

- 4 MB RAM, EXP. to 16MB
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  32K Cache Memory (386DX-33)
- Ext. Numeric Key Pad Included
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386SL-25 NP-305 $2195

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Powerful Standard Features

You'll get 2 large 1400mA battery packs for 4.5 hours of constant operation, An auto-switching AC adapter/ battery charger lets you work and charge at the same time.

The large, paper-white LCD screen is 9.5" wide and boasts 64 levels of gray scale. You'll get razor-sharp, lifelike graphic details, even while displaying color images !

Its unique, ergonomic keyboard is wedge-shaped to make typing easier. Thousands of users report it is so easy to use that they never use the external keyboard port. Other ports include a serial and a parallel port, as well as connections for an external VGA and floppy drive.

Choices for creative connectivity

Communicate with a plug-in modem, fax or combination fax/modem module. Scan any document and fax it instantly with the fax/scanner module. Hook into optional CD storage with the SCSI interface. Link up to MPC with the voice mail pack. Add a second serial port to drive another printer or other serial peripheral. Pop-in a car adapter. Link-up to Big Blue with an IBM 3270 emulation module, an ArcNet interface, or the optional ethernet (LAN) module. Attach a 2nd floppy disk drive with the FDD/RS-232 module. They all slide into your NP900 as easily as a cassette tape !

OPTIONS :

- ▲ Car adapter
- ▲ Fax/scanner
- ▲ Ext FDD/RS-232
- ▲ Fax & modem
- ▲ Ethernet (LAN)
- ▲ 2nd Serial port
- ▲ IBM 3270 Em-ulation
- ▲ Modem
- ▲ SCSI interface
- ▲ Quick Charger
- ▲ Others

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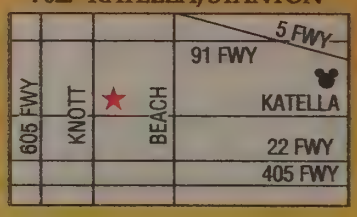

REVIEWS

PC SOFTWARE

SIGNATURE

Published By: XyQuest, Inc.
List Price: $495
Reviewed By: John Cowan

Signature is a full-featured, graphics capable, DOS-based word processor, competitive in every respect with WordPerfect and Microsoft Word. Its release, eagerly awaited by users of its predecessor XyWrite III Plus, was delayed repeatedly while IBM waffled, and then reneged, on an agreement to market it as its product. The wait has proved worthwhile.

Offering one of the best interfaces I have yet encountered, Signature is a vast improvement over the arcane, command driven XyWrite. It utilizes the industry standard Common User Access interface, with a menuing system similar to Windows and hot key selections intuitively tailored to the IBM standard keyboard.

Signature is also the only advanced DOS-based word processor with the ability to edit in WYSIWYG mode, an invaluable time saver toward the end of a desktop publishing job when you need to get the look just right. No more tedious switching back and forth between viewing and editing modes. Factor in the ability to transfer files easily between Signature and a wide variety of word processor, spreadsheet, and database programs, and you have a very powerful writing tool.

When a program is changed as radically as Signature, however, something is bound to be lost. In this case it is speed. XyWrite had the advantage of blazing speed for entering and editing data, a characteristic which endeared it to journalists. Once you learned its commands, it never got in your way. Signature, by comparison, seems annoyingly slow on my vintage 286. The screen doesn't keep up with the keyboard, the program takes forever to load, and menu navigating requires many disk accesses. A fast processor or a RAM disk would of course help. XyQuest recognizes the problem and promises increased speed in future revisions. They are also preparing a Windows version with a fast editing mode. (XyQuest, Inc., 44 Manning Rd, Billerica, MA 01821. 508/671-0888)

GRANDVIEW 2.0

Published By: Symantec
List Price: $295
Reviewed By: Birrell Walsh

For some tasks, an outliner is the only tool.

I. If you need to organize lists,
II. if you need sections and subsections
  A. that you can, at will:
    1. collapse,
    2. expand,
    3. annotate with extensive documents of a few lines or a few pages,
    4. reorganize,
III. then you want an outliner.

The problem is that many outlining programs force you to choose.

continued on page 90

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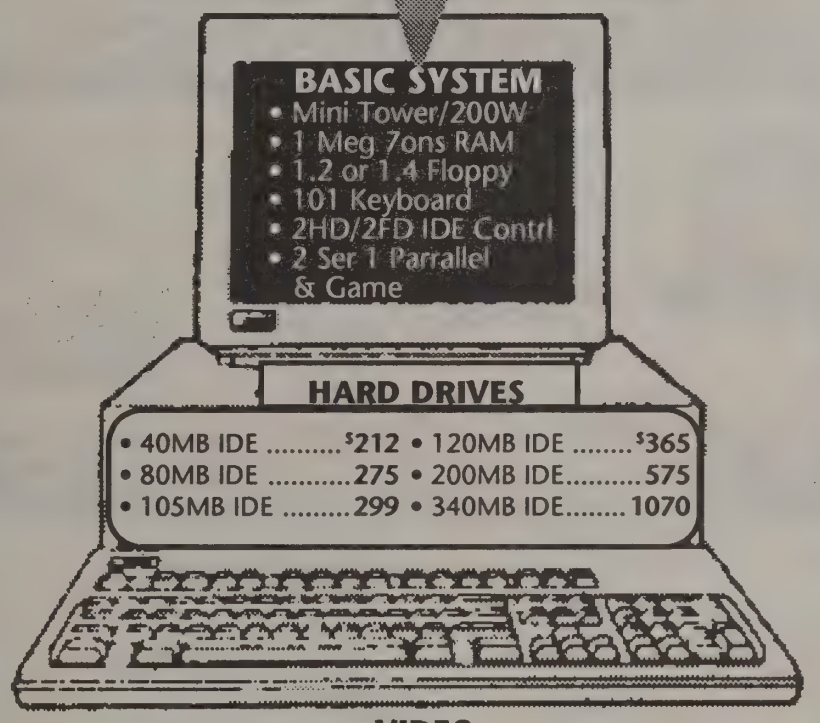
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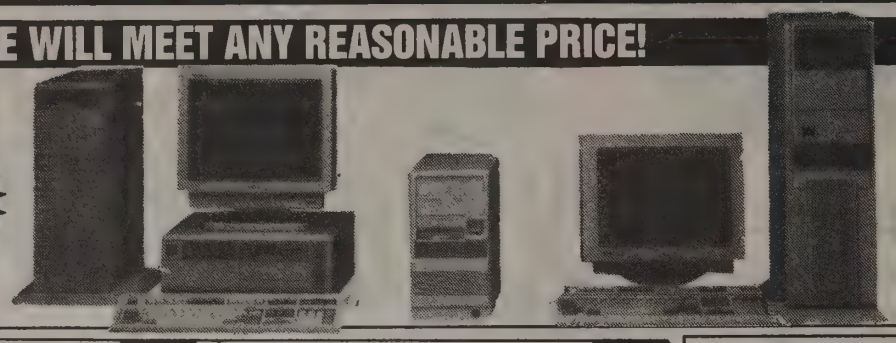

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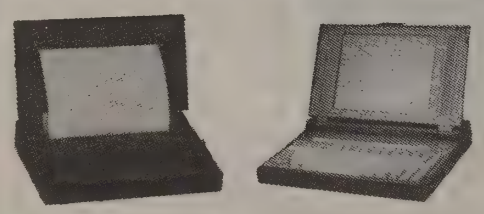

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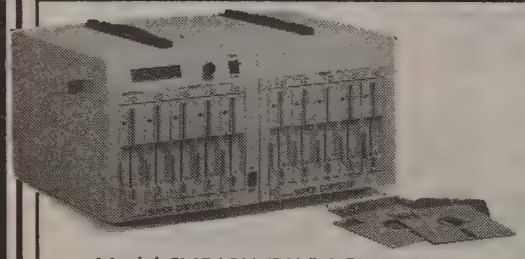

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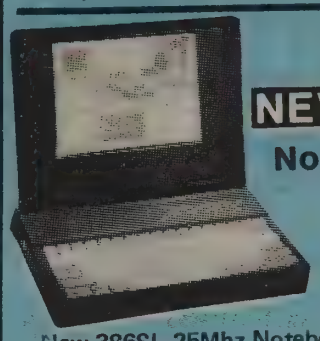

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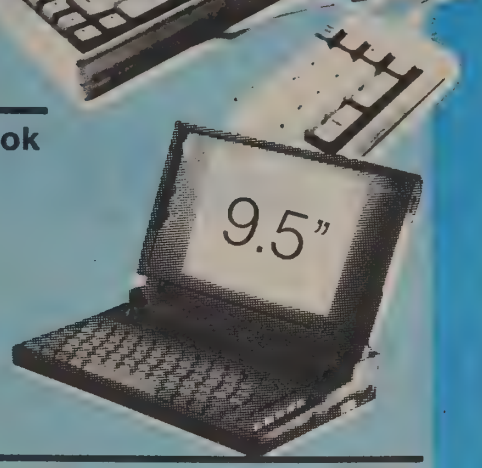

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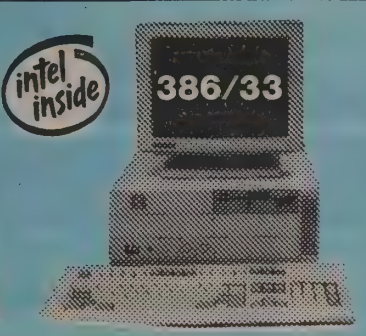

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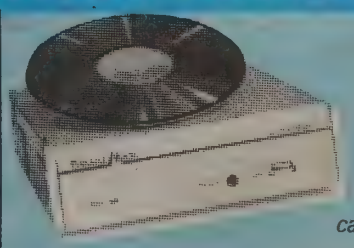

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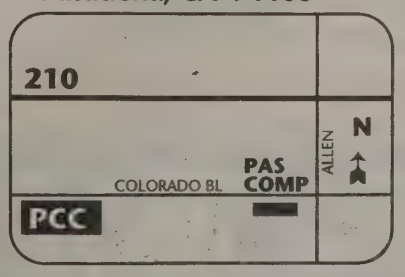

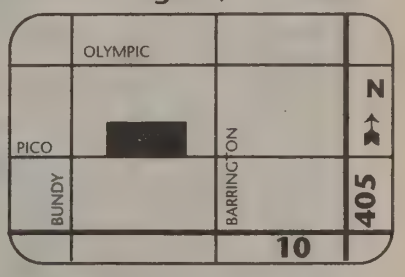

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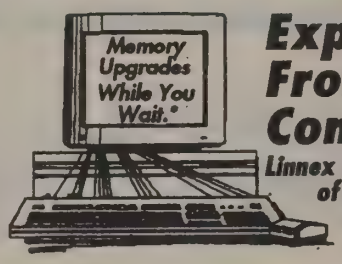

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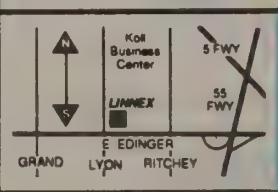

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PRODUCT SPOTLIGHT

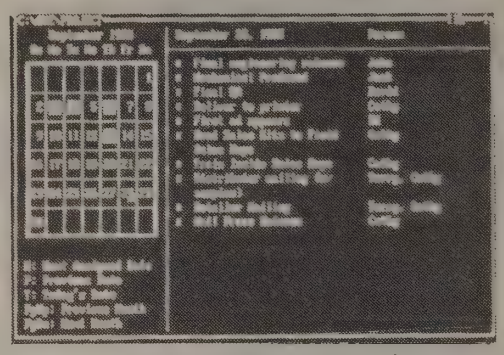
continued from page 85

Either you get a great outliner and a lousy word processor, or you have a fine word processor with only an elementary outliner.

The perfect hybrid does exist, though, for the DOS user. I have settled on GrandView v2.0. It is marketed by Symantec, the people who make MORE for the Macintosh.

GrandView outlines have every possible kind of outline labeling, from no labels at all, through numerical (1.2.3.), Harvard (I.A.1.C.), and bullets. There is also cross-reference by categories. You can assign outline items to categories and recover all the items in each category with a few keystrokes. While GrandView is not as flexible as Lotus Agenda, the categories make rich cross-referencing possible.

Merged with this outliner is a straightforward word processor in which I have done most of my writing for several years. All the standard formatting and print features are available. It is not WYSIWYG, but there is a print preview that helps you to save paper.



You can export to Harvard and Freelance Chart, if you have them; or to any of fifteen different outliner and word processor formats.

The combination of excellent word processor and excellent outliner is ideal for a writer or researcher. You can keep everything in one file, while concealing most of it under summary headlines. My complete contact file for the computer business—221 contacts to date—is in one compact GrandView file. If you work in the DOS world and need an outliner, GrandView is the choice. (Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014. 408/253-9600)

BOOKS

WINDOWS 3.1 COMPANION

Published By: Microsoft Press
Written By: Lori L. Lorenz, R. Michael O'Mara, and Russell Borland
List Price: $27.95
Reviewed By: Woody Liswood

I am firmly convinced that the large number of books on the market about the major programs are there to provide documentation for all the people who are using copies of copyrighted programs. In fact, Microsoft even publishes some of these books. I suspect they feel that even if they are being ripped off, selling books about the program provides some revenue.

Windows 3.1 Companion does a great job of providing all the information you need to install and run Windows 3.1.

If this is the case, the *Windows 3.1 Companion* does a great job of providing all the information you need to install and run Windows 3.1. It is written in a lighter, more readable style than the official 3.1 documentation, including different illustrations and a four-color section discussing "Windows in Color." On the other hand, the

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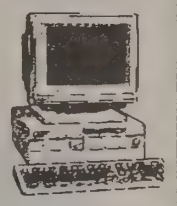
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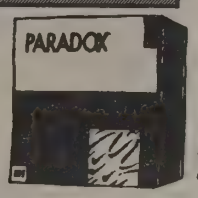

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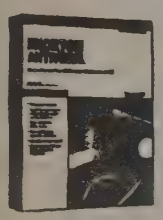
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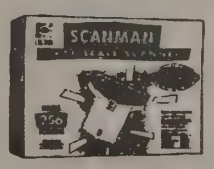

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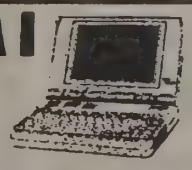
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Orchid SuperBoard 486DX-50MHz Local Bus M/B w/256k Cache	$1115.00(1085.00)
w/Orchid Pro-Designer IIs-D 32-bit 1MB VGA Card	$1295.00(1260.00)
w/Orchid Fahrenheit 1280-D 1MB Graphics Accelerator Card	$1365.00(1325.00)
Orchid SuperBoard 486DX-33MHz Local Bus M/B w/256K Cache	$720.00(700.00)
w/Orchid Pro-Designer IIs-D 32-bit 1MB VGA Card	$900.00(875.00)
w/Orchid Fahrenheit 1280-D 1MB Graphics Accelerator Card	$965.00(940.00)
OPTI Baby 486DX-33MHz Local Bus M/B w/64K Cache	$560.00(545.00)
w/Tseng Lab ET-4000 1MB Local Bus VGA Card	$695.00(675.00)
w/S3 1MB Graphics Accelerator Card	$800.00(780.00)
w/S3 1MB Graphics Accelerator/IDE Multi I/O Card	$870.00(845.00)
VEGA Baby 486DX-50MHz M/B w/256K Cache (USA made)	$960.00(930.00)
VEGA Baby 486DX2-50MHz M/B w/256K Cache (USA made)	$780.00(755.00)
VEGA Baby 486DX-33MHz M/B w/64K Cache (USA made)	$615.00(595.00)
VEGA Baby 486SX-25MHz M/B w/64K Cache (USA made)	$350.00(340.00)
UMC Baby 486DX-50MHz M/B w/256K Cache (Write-back cache)	$925.00(895.00)
UMC Baby 486DX2-50MHz M/B w/356K Cache (write-back cache)	$740.00(720.00)
UMC Baby 486DX-33MHz M/B w/64K Cache (Write-back cache)	$555.00(540.00)
OPTI Baby 486DX-50MHz M/B w/256K Cache (Write-back cache)	$935.00(905.00)
OPTI Baby 486DX2-50MHz M/B w/256K Cache (Write-back cache)	$773.00(750.00)
OPTI Baby 486DX-33MHz M/B w/64K Cache (Write-back cache)	$570.00(555.00)
OPTI Baby 386DX-40MHz M/B w/64K Cache (Write-back cache)	$247.00(240.00)
UMC Baby 386DX-40MHz M/B w/64K Cache (Write-back cache)	$252.00(245.00)
C & T Baby 386DX-40MHz M/B w/64K Cache	$257.00(250.00)
OPTI Baby 386DX-33MHz M/B w/64K Cache (Intel CPU)	$247.00(240.00)
OPTI Baby 386DX-33MHz M/B w/64K Cache (AMD CPU)	$237.00(230.00)
C & T Baby 386DX-33MHz M/B w/64K Cache (Intel CUP)	$257.00(250.00)
C & T Baby 386DX-33MHz M/B w/64K Cache (AMD CPU)	$252.00(245.00)
**** 256K Cache upgrade for all 486 and 386 M/B*	*$55.00*
OPTI Baby 386DX-25MHz M/B (Intel CPU)	$196.00(190.00)
OPTI Baby 386DX-25MHz M/B (AMD CPU)	$186.00(180.00)
C & T Mini 386SX-25MHz M/B	$152.00(148.00)
Headland Mini 386SX-25MHz M/B	$147.00(143.00)
Headland Mini 386SX-16MHz M/B	$129.00(125.00)

ADD-ON BOARDS

Mono/Graphics/Printer Card	$16.00(15.00)
TVGA-9000 VGA Card w/256K (Trident 9000 Chipset,upto 512K)	$42.00(40.00)
TVGA-8900C 1MB SuperVGA Card (Trident 8900C Chipset)	$73.00(70.00)
PVGA-1C VGA Card w/256K (Paradise WD90C11 Chipset,upto 512K)	$54.00(52.00)
PVGA-1D SuperVGA Card (Paradise WD90C30 Chipset)	$89.00(86.00)
ET-4000 1MB VGA Card (Tseng Lab ET-4000 Chipset)	$102.00(99.00)
ET-4000HC 1MB VGA Card w/Sierra Hi-Color Chip (32,768colors)	$124.00(120.00)
ATI VGA Wonder XL VGA Card (32,768colors,OEM Version)	$144.00(140.00)
ATI VGA Wonder XL VGA Card w/Mouse (OEM Version)	$180.00(175.00)
ATI Graphics Vantage 1MB VGA Card w/Mouse (OEM package) - 11 times faster than SuperVGA cards, 1280x1024	$237.00(230.00)
ATI Graphics Ultra 1MB (VRam) VGA Card w/Mouse (OEM package) - 24 times faster than SuperVGA cards, 1280x1024	$397.00(385.00)
Diamond SpeedStar 24 1MB VGA Card w/Hi-Color Chip, 16 mill colors	$192.00(185.00)
Diamond Stealth 1MB (VRam) Window Accelerator w/Hi-Color Chip	$273.00(265.00)
Orchid Pro-Designer II 1MB VGA Card (72Hz refresh rate @800x600)	$148.00(143.00)
Orchid Pro-Designer IIs 1MB VGA Card w/Sierra RAMDAC (32,768colors) - 70Hz refresh rate @1024x768	$173.00(168.00)
Orchid Fahrenheit 1280 1MB (VRam) Graphics Accelerator w/Sierra RAMDAC - 32,768colors, 12 times faster than SuperVGA cards, 1280x1024	$266.00(258.00)
AT I/O (2 Serial 1 Parallel 1Game) Card	$16.00(15.00)
Parallel (Printer) Card	$10.00(10.00)
Game Card (Dual ports)	$11.00(11.00)
AT IDE Adapter (Dual floppy & hard disk) w/Cable	$17.00(16.00)
AT Super IDE IO Adapter (Dual floppy & hard disk, 2S, 1P, 1G)	$24.00(23.00)
UltraStor 12F 1:1 ESDI Floppy/Hard Disk Controller	$154.00(149.00)
UltraStor 12F-24 1:1 (24MB/s) ESDI Floppy/Hard Disk Controller	$165.00(160.00)
UltraStor 12C ESDI Caching FD/HD Controller w/1MB (upto 16MB)	$396.00(385.00)
UltraStor 15C IDE Caching FD/HD Controller w/1MB (upto 8MB)	$232.00(225.00)
Future Domain 850 8-bit SCSI Hard Disk Controller	$66.00(64.00)
Future Domain 1670 16-bit SCSI Floppy/Hard Disk Adapter Kit	$163.00(158.00)
Always IN-2000 16-bit SCSI Host Adapter (Novell certified)	$195.00(189.00)
ADAPTEC AHA-1542B SCSI Floppy/Hard Disk Adapter (card only)	$237.00(230.00)
ADAPTEC AHA-1542BK SCSI Bus Master Host Adapter Kit	$278.00(270.00)
**** EISA Controller for SCSI, ESDI, IDE*	*Call*

CHASIS

CS-20 Baby AT Case w/200W UL P.S. (3x5.25",2x3.5")	$84.00(81.00)
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CS-15 Mid Vertical Case w/230W P.S.(3x5.25",3x3.5", Digital)	$106.00(102.00)
CS-35 Mid Vertical Case w/230W UL P.S. (3x5.25",3x3.5",Digital)	$110.00(106.00)
CS-36 Full Vertical Case w/230W UL P.S. (6x5.25",2HD,Digital)	$137.00(132.00)
CS-D2 Baby AT Case w/200W P.S. (3x5.25",1x3.5")	$70.00(67.00)
CS-M1 Mini Vertical Case w/200W P.S. (2x5.25",3x3.5",Digital)	$70.00(67.00)
CS-M2 Mini Vertical Case w/200W P.S. (2x5.25",3x3.5")	$68.00(65.00)
CS-931 Mini Vertical Case w/200W P.S. (2x5.25",3x3.5",Digital)	$73.00(70.00)
CS-923 Mid Vertical Case w/200W P.S. (3x5.25",3x3.5",Digital)	$94.00(91.00)
CS-912 Full Vertical Case w/230W UL P.S. (4x5.25",2HD,Digital)	$125.00(120.00)
Diamond Series: (Black color model available +$3.00)	
CS-130 Full Vertical Case w/250W UL P.S. (4x5.25",2HD,Digital)	$156.00(150.00)
CS-230 Mid Vertical Case w/250W UL P.S. (4x5.25",2HD,Digital)	$146.00(140.00)
CS-330 Mini Vertical Case w/220W UL P.S. (2x5.25",3x3.5" Digital)	$90.00(87.00)
CS-530 Desktop Case w/220W UL P.S. (2x5.25",2x3.5",2HD,Digital)	$103.00(99.00)
CS-730 Baby AT Case w/220W UL P.S. (2x5.25",1x3.5,1HD,Digital)	$94.00(91.00)
CS-830 Slim Line Case w/220W UL P.S. (1x5.25",1x3.5",1HD,Digital)	$90.00(87.00)

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TEAC 1.2MB FDD (5.25")	$61.00(59.00)
TEAC 1.44MB FDD (3.5") w/Mounting Kit	$57.00(55.00)
TEAC 2.88MB FDD (3.5") w/Mounting Kit & Controller	$167.00(162.00)
Panasonic 1.2MB FDD (5.25")	$58.00(56.00)
Panasonic 1.44MB FDD (3.5") w/Mounting Kit	$54.00(52.00)
Conner CP-3000 40MB IDE HDD (29ms)	$204.00(198.00)
Conner CP-30084 80MB IDE HDD (17ms)	$273.00(265.00)
Conner CP-30104 120MB IDE HDD (17ms)	$335.00(325.00)
Conner CP-30174 170MB IDE HDD (17ms)	$381.00(370.00)
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Maxtor MX-7080A 80MB IDE HDD (17ms)	$278.00(270.00)
Maxtor MX-7080S 80MB SCSI HDD (17ms)	$284.00(275.00)
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Maxtor PO-12 1.2GB SCSI HDD (13ms)	$1745.00(1695.00)
Quantum LPS52AT 52MB IDE HDD (17ms,64K cache buffer)	$222.00(215.00)
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Quantum LPS12A012 120MB IDE HDD (17ms,256K cache buffer)	$300.00(330.00)
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Western Digital AC280 80MB IDE HDD (17ms)	$283.00(275.00)
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SyQuest SQ5110 88MB SCSI Removable Disk Drive	$441.00(428.00)
SyQuest SQ400 44MB Cartridge	$75.00(73.00)
SyQuest SQ800 88MB Cartridge	$107.00(104.00)
SyQuest SQ01 SCSI Adapter w/Software (for internal drive only)	$45.00(43.00)

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Focus-5001 130keys Keyboard (Dble function keys, calculator, etc.)	$60.00(58.00)
Focus-6000 101keys Keyboard (Soft click)	$38.00(37.00)
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Focus-8000 111keys Keyboard (Calculator, Soft click)	$46.00(45.00)
Focus-9000 128keys Keyboard (Programmable, same as 5001 K/B)	$72.00(70.00)
Fujitsu-4700 101keys Keyboard	$47.00(45.00)
Honeywell-101WIN 101keys Keyboard (3yr. warranty)	$40.00(38.00)
KT-2000 101keys Keyboard (Keytronic made)	$45.00(44.00)

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CTX5439A 14" SuperVGA Color Monitor (1024x768,.39dp)	$255.00(245.00)
CTX5468A 14" SuperVGA (TriScan) Color Monitor (1024x768,.28dp)	$290.00(278.00)
CTX5468NI 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$328.00(318.00)
CTX1760 17" Flat-Screen Multi-Freq Monitor (1280x1024,.28dp)	$1060.00(1030.00)
NEC MultiSync 3FGx 15" Color Monitor (1024x768,.28dp)	$665.00(645.00)
NEC MultiSync 4FG 15" Color Monitor (AccuColor & Digital Controls 1024x768,.28dp)	$780.00(755.00)
NEC MultiSync 5FG 17" Color Monitor (AccuColor & Digital Controls 1280x1024,.28dp)	$1470.00(1425.00)
NEC MultiSync 6FG 21" Color Monitor (AccuColor & Digital Controls 1280x1024,.28dp)	$2950.00(2865.00)
Sony CPD-1304S 14" MultiScan Monitor (Non-Interlaced,.25dp)	$595.00(575.00)
Sony CPD-1604S 17" MultiScan Monitor (Non-Interlaced,.25dp)	$1110.00(1075.00)
Suziba SD-212A 12" Amber Monochrome Monitor	$80.00(77.00)
Suziba SD-414A 14" Amber Monochrome Monitor	$98.00(95.00)
Suziba SD-414VFM 14" Paper-white MonoVGA Monitor	$117.00(113.00)
ViewSonic 1 14" VGA Color Monitor (640x480,.39dp)	$236.00(230.00)
ViewSonic 2 14" VGA Color Monitor (640x480,.28dp)	$292.00(284.00)
ViewSonic 4E 14" SuperVGA Color Monitor (1024x768,.28dp)	$316.00(305.00)
ViewSonic 6 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$355.00(345.00)
ViewSonic 6E 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$345.00(325.00)
Viewsonic 5E 14" Non-Interlaced Color Monitor (1024x768,.28dp 72Hz refresh rate @1024x768)	$415.00(400.00)
ViewSonic 5+ 14" Non-Interlaced Color Monitor (1024x768,.25dp Trinitron tube, 70Hz refresh rate @1024x768)	$515.00(500.00)
ViewSonic 6FS 15" Multi-Frequency Color Monitor (Flat-Screen, Low radiation, 1280x1024,.28dp, 72Hz refresh rate @1024x768)	$605.00(585.00)
ViewSonic 7 17" Multi-Frequency Color Monitor (Digital Auto-Tracking Flat-Screen, Low radiation, 1280x1024,.28dp)	$1090.00(1060.00)
ViewSonic 8 20" Multi-Frequency Color Monitor (Digital Auto-Tracking Low radiation, 1280x1024,.28dp)	$1645.00(1595.00)

PRINTERS

Citizen 200GX Printer (9pin/213cps/80col/color option)	$168.00(162.00)
Citizen GSX-130 Printer (24pin/180cps/80col/color option)	$236.00(229.00)
Citizen GSX-140+ Printer (24pin/220cps/80col/color option)	$290.00(280.00)
Citizen GSX-145 Printer (24pin/192cps/132col/color option)	$375.00(364.00)
**** Color Kit for Citizen 200GX, GSX-130 or GSX-140+*	*+45.00*
Hewlett Packard DeskJet 500 InkJet Printer	$622.00(409.00)
Hewlett Packard DeskJet 500C Color InkJet Printer	$720.00(699.00)
Hewlett Packard IIP Plus Laser Printer	$830.00(805.00)
Hewlett Packard IIIP Laser Printer	$1045.00(1015.00)
Hewlett Packard III Laser Printer	$1530.00(1485.00)
Panasonic KX-P1180i Printer (9pin/240cps/80col)	$159.00(154.00)
Panasonic KX-P1123 Printer (24pin/240cps/80col)	$198.00(192.00)
Panasonic KX-P1124i Printer (24pin/300cps/80col)	$288.00(279.00)
Panasonic KX-P1624 Printer (24pin/192cps/132col)	$350.00(340.00)
Panasonic KX-P2180 Quiet Printer (9pin/240cps/80col/color option)	$177.00(172.00)
Panasonic KX-P2123 Quiet Printer (24pin/240cps/80col/color option)	$246.00(239.00)
Panasonic KX-P2124 Quiet Printer (24pin/320cps/80col/color option)	$336.00(325.00)
Panasonic KX-P2624 Quiet Printer (24pin/300cps/132col)	$398.00(385.00)
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Panasonic KX-P4410 Laser Printer (5ppm/512K/300dpi)	$649.00(635.00)
Panasonic KX-P4430 Laser Printer (5ppm/1MB/300dpi)	$899.00(875.00)
Star NX-1001 Multi-Font Printer (9pin/180cps/80col)	$139.00(135.00)
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Star NX-2420R Rainbow Color Printer (24pin/250cps/80col)	$286.00(278.00)
Star SJ-48 StarJet InkJet Printer (4lbs,166cps,360dpi)	$305.00(296.00)

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XT-150W Power Supply	$34.00(32.00)
Mini-AT 200W Power Supply (XT-size)	$40.00(38.00)
AT-200W Power Supply (Full size)	$45.00(43.00)
PS-2 200W Power Supply (for Mini-Tower or Baby-AT cases)	$40.00(38.00)
PS-2 200W UL Power Supply (for Mini-Tower or Baby-AT cases)	$45.00(43.00)
PS-2 230W UL Power Supply (for Mini-Tower or Baby-AT cases)	$48.00(46.00)

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Mitsumi Internal CD-ROM w/Controller	$265.00(255.00)
Sony Internal CD-ROM Drive w/Controller	$348.00(335.00)
Sony External CD-ROM Drive w/Controller	$388.00(375.00)
**** CD Package - Illustrated Encyclopedia, National Geographics, Reference Library, US Atlas / World Atlas, CD Game Pack II*	*$145.00*
Sound Card w/Speakers (Ad-Lib compatible)	*$75.00(72.00)*
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Logitech First Mouse	$42.00(39.00)
Logitech Serial MouseMan	$58.00(56.00)
Logitech Bus MouseMan	$70.00(68.00)
Logitech PS-2/Serial Combo MouseMan	$70.00(68.00)
Logitech Serial Trackman	$65.00(63.00)
Logitech Bus Trackman	$76.00(73.00)
Logitech Trackman 2 (serial)	$82.00(79.00)
Logitech ScanMan 32 (Hand-held Scanner)	$148.00(144.00)
Logitech ScanMan 256 (Grey Scale Scanner)	$265.00(255.00)
Logitech ScanMan 256 w/Perceive Personal OCR Software	$310.00(298.00)
MicroSoft Serial Mouse	$89.00(86.00)
MicroSoft Bus Mouse	$89.00(86.00)
ArtyMouse AX300 Serial Mouse w/Mouse Pad & Pocket	$21.00(20.00)
TrueDox TrackBall (Serial)	$35.00(34.00)
Z-Nix SuperMouse w/MicroSoft Windows 3.1	$65.00(64.00)
Smart-One Internal 2400 Baud Data Modem	$44.00(42.00)
Smart-One External 2400 Baud Data Modem	$67.00(65.00)
Smart-One Internal 9600/4800/2400 Send/Receive Fax/Data Modem	$80.00(78.00)
U.S. Robotics Sportster 2400PC Internal Data Modem	$138.00(134.00)
U.S. Robotics Sportster 2400 External Data Modem	$149.00(144.00)
U.S. Robotics Sportster 9600PC Internal Data Modem (V.32/V.42bis)	$418.00(402.00)
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Zoltrix Standard Internal 9600/2400 Send/Receive Fax/Data Modem	$89.00(86.00)
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Zoltrix Pocket 9600/2400 Send/Receive Fax/Data Modem	$94.00(91.00)
Zoltrix 9600i Internal 9600 Baud Data Modem w/MNP5 & V.42bis	$265.00(255.00)
Zoltrix 9600e External 9600 Baud Data Modem w/MNP5 & V.42bis	$295.00(285.00)
Colorado Memory System DJ-10 120MB Tape Backup System	$198.00(192.00)
Colorado Memory System DJ-20 250MB Tape Backup System	$262.00(258.00)
Colorado Memory System AB-11 External Adapter Kit	$40.00(38.00)
Colorado Memory System KE-09 External Drive Kit	$85.00(82.00)
Colorado Memory System FC-10 500Kb/s-1Mb/s Adapter Kit	$90.00(87.00)
Colorado Memory System TC-15 Data Compression Adapter Kit	$189.00(184.00)
Cyrix 83X87-16 / IIT 3C87SX-16 Math Coprocessor	$113.00 / $110.00
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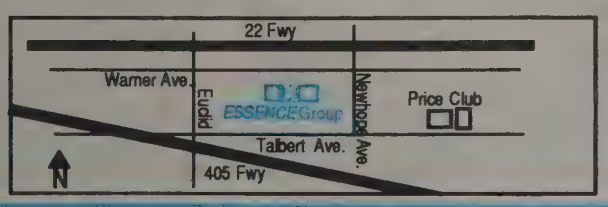
Cyrix 83X87-25 / IIT 3C87SX-25 Math Coprocessor	$136.00 / $126.00
Cyrix 83D87-25 / IIT 3C87DX-25 Math Coprocessor	$154.00 / $146.00
Cyrix 83D87-33 / IIT 3C87DX-33 Math Coprocessor	$167.00 / $156.00
Cyrix 83D87-40 / IIT 3C87DX-40 Math Coprocessor	$185.00 / $188.00



Terms & Conditions: All parts and systems carry a One Year Limited Warranty except monitors and printer which warranty by manufacturers. All sales on Monitor, Printer and Hard Disk Drives are final. NO REFUND> All returns are subjected to our approval and must have prior authorization. Return items must be in it's original condition, send shipping prepaid. All refunds or credits are less shipping and bank charges. All refunds items must be returned within 14 days of invoice. There will be a 20% restocking fee after the 7 days period and within 30 days of invoice. Thereafter, only exchanges are available during the rest of the warranty period. Price, Specification & Availability subject to change without any notice. All prices subject to change without notice.

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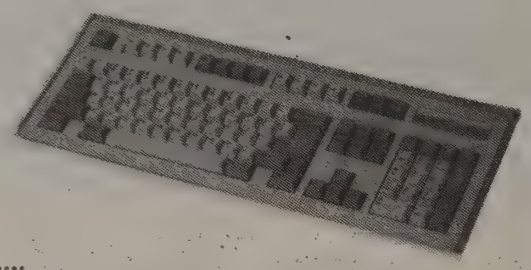

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PRODUCT SPOTLIGHT

continued from page 90

information in this book is also available in the legitimate documentation.

If you already own Windows you might prefer the writing style of this book better than the original documentation. If you use Windows microapps (also called accessories), you will probably more easily learn about using them from this book than from the Windows documentation.

This is a well-written, intelligent, straightforward explanation of Windows 3.1: what it does, what it comes with, and how to use these features. (Microsoft Press, One Microsoft Way, Redmond, WA 98052-9953. 1-800-MSPRESS)

GAMES

By Mike Markowitz

TIME TREKS

Designed By: Meg Strief, Bob Stevens, and David Smith
Published By: Earthquest
For: Macintosh (2MB RAM, 2.5MB under System 7, supports color)
List Price: $59.95

Here is another sugar coating on the bitter pill of history. Time Treks is a set of big, linked HyperCard stacks incorporating an adventure game and an archive of world history. This can be viewed as another instance of the wildly successful Carmen Sandiego paradigm of educational software.

Anyone who thinks that HyperCard is not an environment for serious software development should take a look at Time Treks. The program makes extensive use of color icons, although most of the graphics are scanned in monochrome.

The game is a wild hybrid of Jeopardy and a dungeon adventure. To gain control of squares, the Time Doors, on the board you have to answer various kinds of questions about history. Some of the answers can be searched out in the Archives, others send you hunting through the cluttered rooms and secret tunnels of an archaeologist's laboratory. Many of the questions seemed like trivia to this history major, but an entertaining HyperCard stack for kids is probably not

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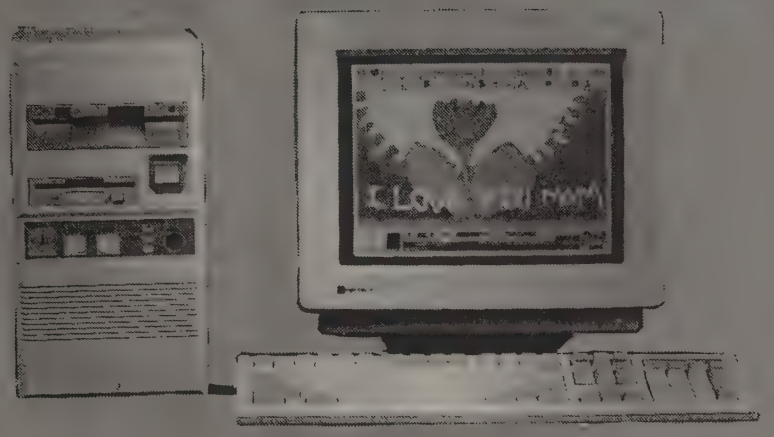

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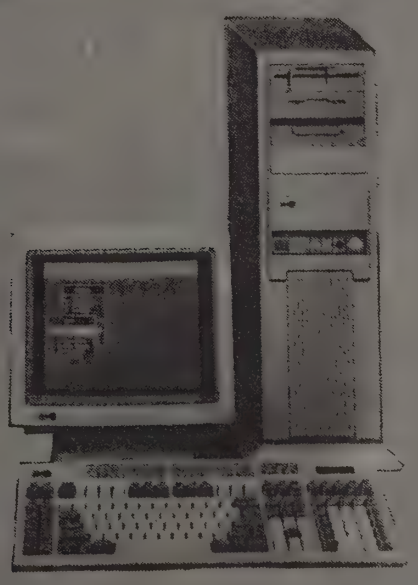

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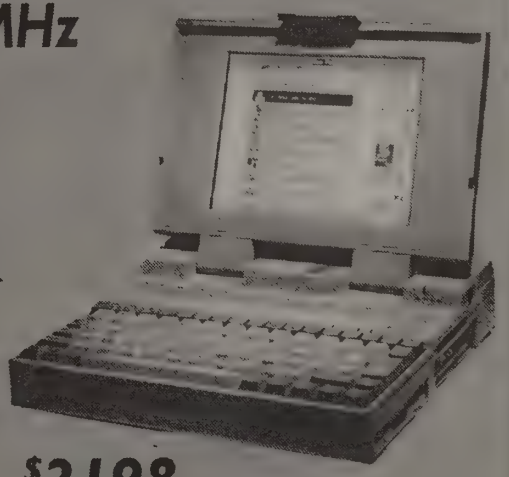

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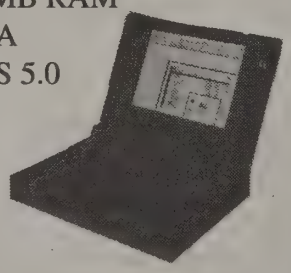

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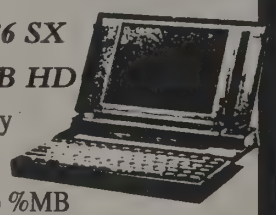

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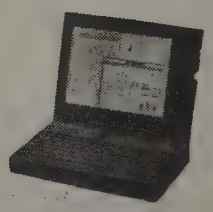

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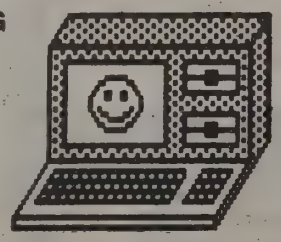

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continued from page 96

the best way to present and discuss heavy ideas.

You don't have to play the game to enjoy Time Treks—you can just explore the Archives, blazing your own trail through all kinds of topical and chronological links. The archives include many time lines that extend across multiple screens. The use of a constant time scale means that the screens are overcrowded with events in the 20th century but nearly empty back in prehistory.

Most of the maps in Time Treks are poorly redrawn monochrome bitmaps, using ugly pattern-fills. This is one area where color PICT files could have been used to good advantage. One of my favorite screens was a world map showing the Age of Exploration. When you click on the name of an explorer (Columbus, Da Gama, Magellan, Cook, etc.) an animated ship traces out the path of his voyage. At various places along the time lines you find an eye icon. When you click on the eye a text box pops up with a quotation from a contemporary document or eyewitness.

The program files are compressed (using DiskDoubler) onto four 800K diskettes. The package includes a fifth disk with a compressed copy of HyperCard 2.1 (the application only), which it requires. After installation the stacks take up about 3.6MB of hard disk space.

Time Treks is strong on structure but thin in content. The excellent overall design and the well-implemented navigation tools really deserve the kind of multimedia database that only a CD-ROM can provide. Once again the designer's imagination crashes up against the hard disk storage barrier. "We ended up cutting and cutting—first the graphics and then the database," one member of the design team told me. When I demonstrated Time Treks to several Mac-savvy elementary school teachers, they said their students would like it. (Earthquest, Inc., 125 University Ave., Palo Alto, CA 94301. 415/321-5838)

Graphics and Animation: 7
Sound: 6
User Interface: 8
Overall Value: 7

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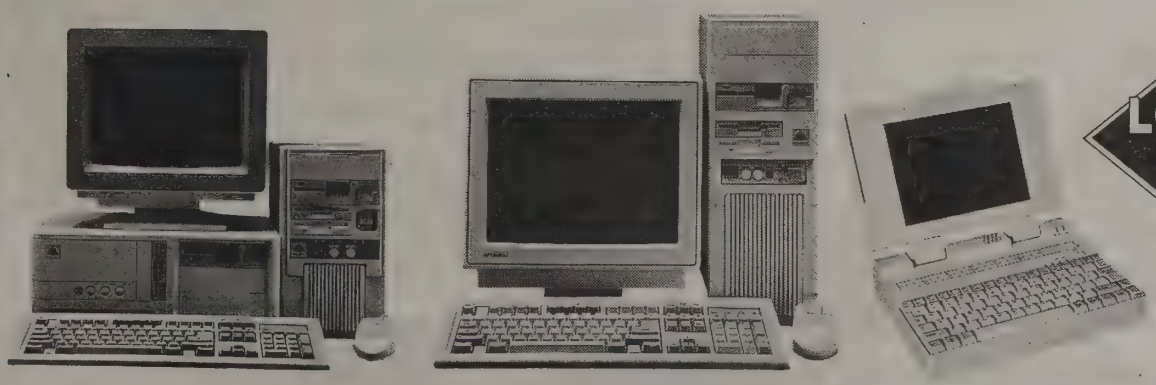

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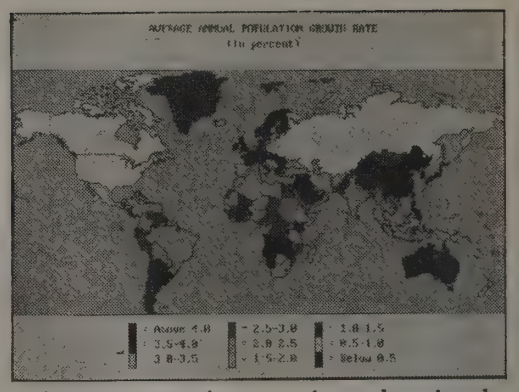
fifteen new countries replaced the former Soviet Union. We still aren't sure how many rubble-strewn mini-states will replace the former Yugoslavia, but the latest release of PCGlobe credits Croatia and Slovenia with independent existence. The program reflects the world situation as of March 15, 1992, and that is a lot more current than anything you will find in a published atlas for quite a while. Annual updates are available to registered users. The price of PCGlobe seems high, compared to a paper-based atlas that offers vastly more graphic detail, but books usually don't have annual updates

As my old geography teacher once said, "Any map that lies (flat), lies (untruthfully)." PCGlobe is not a globe at all, in fact the base map uses a variation of the abominable Mercator projection, making Greenland look as big as South America .



You can zoom in to continental, regional, or individual country maps. The program has a logical menu structure and a smooth point-and-click interface for mouse users.

Country maps can be displayed with or without cities, elevations, rivers, and topographic features. Screens can be saved as standard .PCX files, letting you import maps into any other program that recognizes this format. At your request, the program can display a rather small version of each national flag (you miss the fine detail of Saudi Arabia's Arabic calligraphy or Guatemala's quetzal bird), and beep out a rendition of the national anthem.

PCGlobe includes a fairly extensive database of demographic, economic, and social information for each country. Some of this information is displayed graphically in the form of bar charts. The screen of historical information is mostly a list of dates and events. There is even a screen of tourist information: we learned that the water in Moldovia is not always potable, but not to miss the Pushkin Museum in Kishinev.

You can create your own comparative bar charts, using selected statistics for any country, groups of countries, or regions. A neat little utility will compute and display the distance between any two cities chosen from an extensive list. It will even give you the distance between any two points if you enter the latitude and longitude.

The feature I would most like to see added to PCGlobe is a true representation of the world as a globe, that you could freely rotate and zoom. I also felt that the lack of maps for the North polar region and Antarctica made the package incomplete.

The program is installed from two 720K or four 360K disks. The user manual provides clear explanations of the program's many features and options. PCGlobe has an excellent set of printer drivers, including support for many color printers. I would highly recommend this package for any student or school with an MS-DOS system that supports VGA graphics (at the limited resolution of CGA, the maps are rather jagged.) Journalists, pilots, navigators, and business users with international interests will also find PCGlobe useful. (PCGlobe Inc., 4440 S. Rural Rd., Tempe, AZ 85282-7044. 602/730-9000) ■

Graphics and Animation: 9
Sound: 9
User Interface: 7
Overall Value: 9
(If you like baseball)

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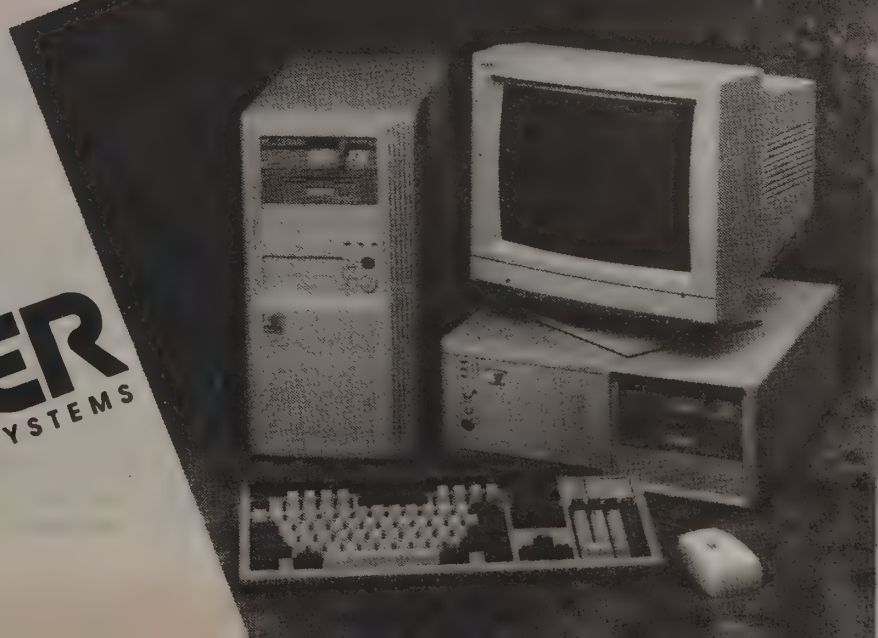

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continued from page 24

will also support much more advanced network management and tracking, something that has long been promised for 3.1 but not delivered in any consistent fashion. Version 4.0 will also support better connections to other networks in a more predictable manner.

Novell has recently been receiving more criticism for not keeping up with the rest of the microcomputer market. Competing operating systems have been making significant inroads in the sales of new networks and even getting some Novell sites to change over. Most Novell sites readily admit frustration with the archaic installation and updating facilities in NetWare and have started blaming everything from slow response to parity errors on "the network." Other network vendors have taken advantage of this dissatisfaction at the same time UNIX systems, particularly those from Sun, have started replacing PC-based networks.

APPLE BLITZES MEDIA WITH NEXT YEAR'S PRODUCT: PERSONAL DIGITAL ASSISTANTS

For a company that normally tries to keep a lid on pre-announcing future hardware, Apple went all out in trying to capture the hearts and minds of the buying public with its unreleased Newton hand-held computer. By introducing it at the Consumer Electronics Show, Apple made it clear that this new computer, which won't be available until sometime next year, will in fact be a consumer electronics item, not a standard computer.

Is such a computer worth more than ten times as much as an advanced personal organizer? Can many people afford $500, much less $1500, for something that keeps track of their appointments and clients?

Newton will be about the size of a thick novel. It uses a pen interface and has no keyboard. The primary audience will be people who live and die by their calendars, daily schedules, and telephone lists. In fact, the first version of Newton will be about the same size and shape as a fat DayRunner or similar personal organizer. Apple hopes that the automation Newton provides will make people want to spend $1000 for something that can be done on paper for about $35.

The technology in Newton will indeed be impressive to the target market, particularly those who haven't used computers much. You will be able to write in "have lunch with Chris on Wednesday," and the computer will know that you mean this coming Wednesday, that "lunch" means around noon, and that it should warn you if you are already scheduled for something at that time. It will have an expansion slot, and some models will be able to communicate with other computers or even laser printers with no direct connection.

All your input will be in your own handwriting, and Apple assures us that the handwriting recognition in Newton will be good enough by then to read most people's writing (many people remain skeptical about this). It will learn your writing as you use it, although it will probably only work well for one person.

Computers that perform similar functions have been available in Japan for years. Although the controlling software in those computers is less advanced than what Apple says will be in Newton, the Japanese market for pen-based portables is booming.

Still, the same problem exists in Japan as in the US. Is such a computer worth more than ten times as much as an advanced personal organizer? Can many people afford $500, much less $1500, for something that keeps track of their appointments and clients? How many people have such a busy schedule that the current day-by-day paper calendars plus some good phone list software on their PC would not do just as well for significantly less? The Japanese are even more gadget-oriented than we are, as shown by their earlier acceptance of hand-held organizers, but the market penetration there is still small relative to what analysts expected.

Apple will face many challenges with Newton, the main one being the problem of differentiating it from a computer. In 1984, they were able to create a market for the Macintosh when everyone said that there was no room for anything other than PC compatibles. In 1993, they will have to make Newton appear to be an organizer instead of a computer so that the people who have stayed away from computers for the last decade will at least take a look at it, and maybe find it fun enough to justify dropping $1000. ■

High-Tech News From Japan

(Excerpted from the weekly news digest of Japan Marketing Group, 400 Groveland Ave., Suite 312, Minneapolis, MN 55403, 612/871-7889. JMG covers products and events in the Japanese computer industry.)

➤**IBM** has begun shipping a Japanese-language version of OS/2 2.0. The new operating system supports multitasking, and allows MD-DOS, DOS/V, Windows 3.0, and OS/2 J 1.3 applications to run in its environment.

➤**GO** developer of the PenPoint operating system, has entered the Japanese market, setting up a Tokyo office and beginning development on a Japanese-language version of the operating system, which it expects to ship within the year. It has also formed agreements with several Japanese software developers to create PenPoint applications.

➤Digitizer and tablet vendors including **Muto Industry, Hitachi Precision, NS CalComp,** and others are committing more resources to pen-based input devices, hoping to find new uses for the pointing technologies they've developed for their digitizers. This move comes in response to analyst predictions that the market for pen-based computers will be substantially larger than that for digitizers.

➤**Kyocera** has developed a new printer, the ECOSYS asi, which it claims is so durable that it eliminates the need to change cartridges. The printer was well received at spring COMDEX; it uses an amorphous silicon drum as the photosensitive medium, and Kyocera claims it lasts up to seventy-five times longer than conventional laser printer cartridges. The company has not announced pricing, but expects the printer to be available in the US in June.

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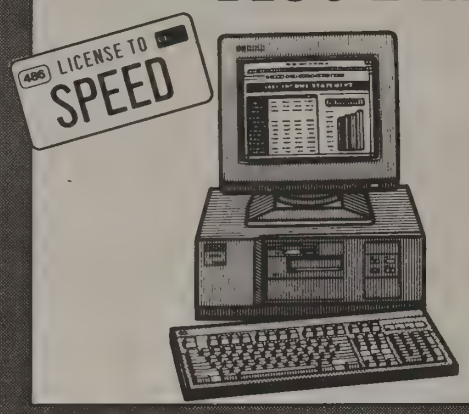

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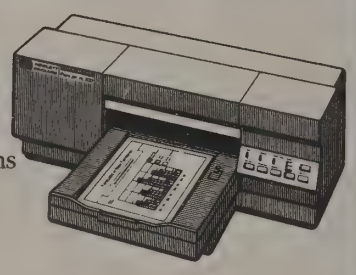

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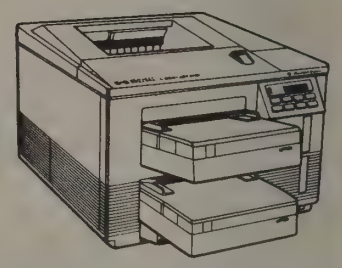

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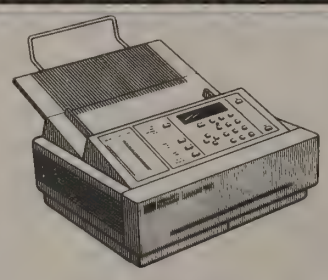

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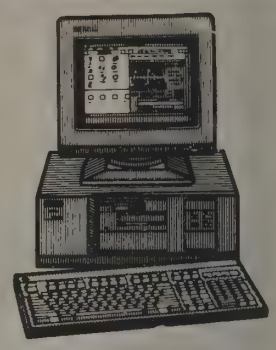

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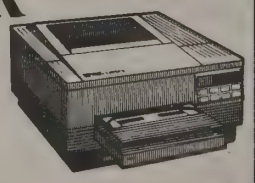

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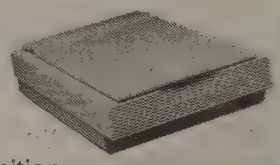

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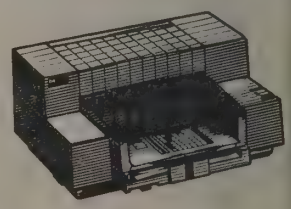

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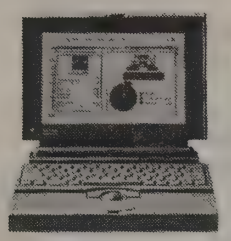

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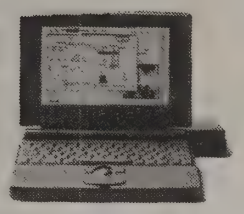

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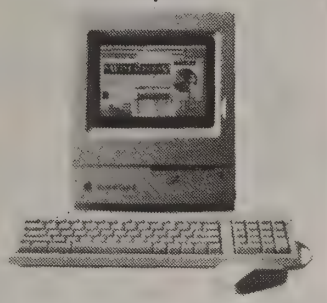

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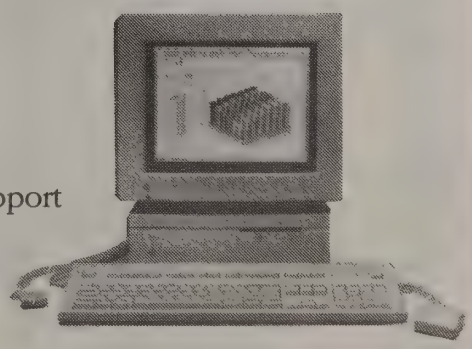

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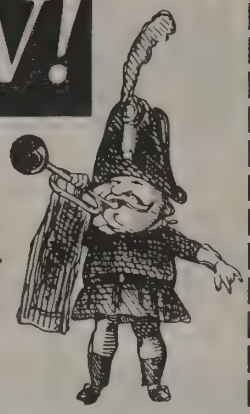

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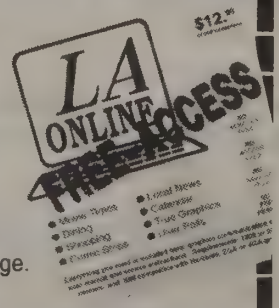

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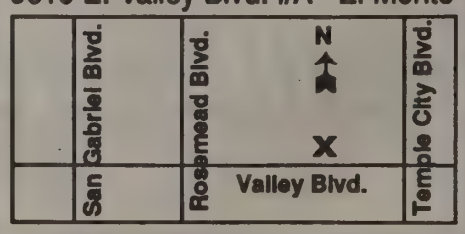

continued from page 66

Department-driven, either directly or indirectly, and defense spending is on its way down. So we've seen a shift there into other markets, but the other markets tended to be a little bit more low-end.

Our high-end business is growing at 20–30% a year, and that's not bad. But our low-end business is growing a lot faster than that, and it averages out at about a 40% growth rate as a company right now.

Our low-end business is exploding. The way we calculate our numbers, it now represents about 60% of our revenue, and more than 80% of our units.

Going back to what you said about a lot of your traditional high-end customers being defense-oriented—this is probably true of a lot of high-end hardware vendors. What do you think the impact of this is going to be long-term? You guys are diverse enough that I don't see you suffering deeply about this, but...

[laughs] A fairly small percentage of our business was ever Defense Department anyway, but a lot of the things that drove the supercomputing market and the high-end workstation marketplace did relate to defense spending.

But the nice thing is we're seeing a boom in film animation, and those people use high-end systems. We're seeing a boom in molecular chemistry—those people need high-end systems. We're seeing a boom in architectural walkthroughs, and architectural and product design in the automotive companies—those are really high-end activities, and generally they have the money to deal with it. We're certainly seeing a boom in different types of high-end scientific analysis, including the environmental work.

So what it's causing is a lot more focus on some, frankly, more relevant areas.

Besides that, there is still a lot of defense research going on, and it's the research sector of the market that we're most involved in, even though a lot of our systems are used for training as well, with the simulation activity.

At the high end, who do you see as your competitors?

At the high end, we really don't have any.

So things like Connection Machines and Crays and stuff are not really in the same world?

Well, our systems get used with them a lot. At the high end, the market's willing to experiment with new ideas, like the massively parallel things. There's always a market for about a hundred million dollars' worth of whatever. But we don't compete a lot with much of anybody there, in terms of the visualization problem. We have, certainly, over a 50% market share at the high end—I don't know how high it is, but it's certainly over fifty.

The real competition comes as you bring these capabilities down into the $10,000 market, or the $5,000 market, where you're competing with people who perhaps don't have the kind of graphics sophistication, but who have traditionally been in that market. So you have established customer-vendor relationships, and you need to break in.

So we have sharp elbows, and we try to elbow our way into the marketplace. That's what we're trying to do. That's where it's really competitive, and we compete with everybody. ■

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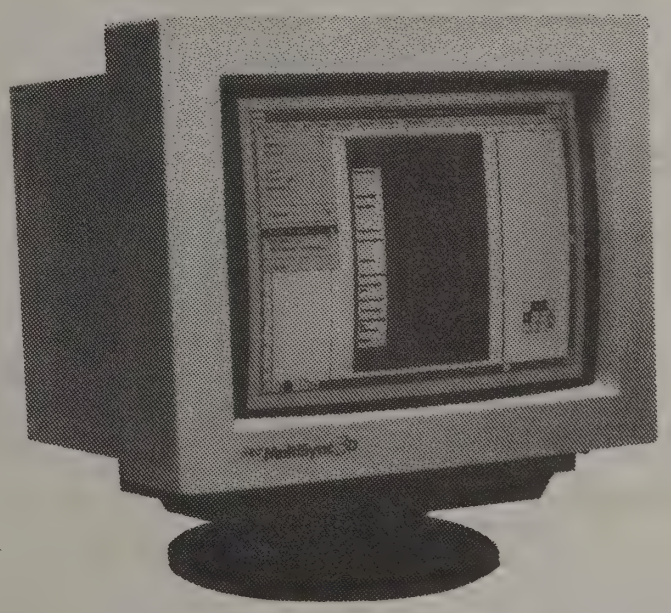

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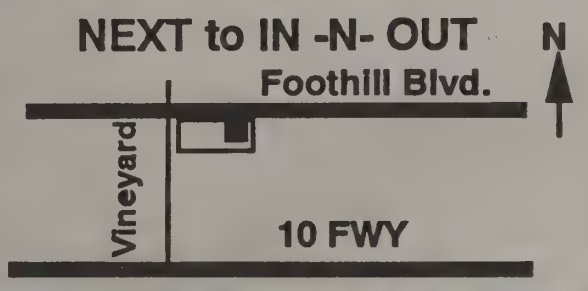

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continued from page 40

Granderson has developed a voice mail application called The Real Estate Hotline, which helps potential home buyers find homes that match their general requirements for price and size.

Using a phone with a tone dial keypad, The Real Estate Hotline callers select a San Francisco community they'd like to live in, the number of bedrooms wanted, the type of home (i.e., single-family or condominium), and the price range they are willing to consider. Once this information has been entered, The Real Estate Hotline describes a home meeting the buyer's criteria, and gives the option of going on to another home, or having his or her call forwarded to the realtor presenting the property.

Granderson has had a "good response from buyers, who are very interested in using it to locate the best house for their needs" and agents "who are earning a good living" and recognize the potential lift the Real Estate Hotline can give their business.

Like Zoetrope Studios, Granderson uses a readily available PC-AT compatible, with four Talking Technology PowerLine 2 boards to support his eight-line system, but has opted for a faster 386/25 CPU, and a larger 245MB hard disk. The Real Estate Hotline also uses Pacific Bell's Centrex services to do call routing, which saved Granderson a lot of scarce start-up cash he otherwise would have had to spend on an expensive in-house PBX.

With robust and inexpensive hardware and software products available for PC-based systems, more companies will be giving you options to "leave a message at the beep" and "press 1 for more options."

"It was a tremendous amount of effort scripting and rescripting [the system]," says Granderson, and it took about half a year "to work out all the bugs." The Real Estate Hotline has been a big success for Granderson, successful enough that he has plans to market his system to others interested in setting up The Real Estate Hotline in other areas.

Love it or hate it, voice mail products are providing companies with new tools that help them use their phones more efficiently, and with new approaches to product marketing and support. Voice mail is here to stay; but if you don't like it, I guess you can always "Press the switchhook for more options." ■

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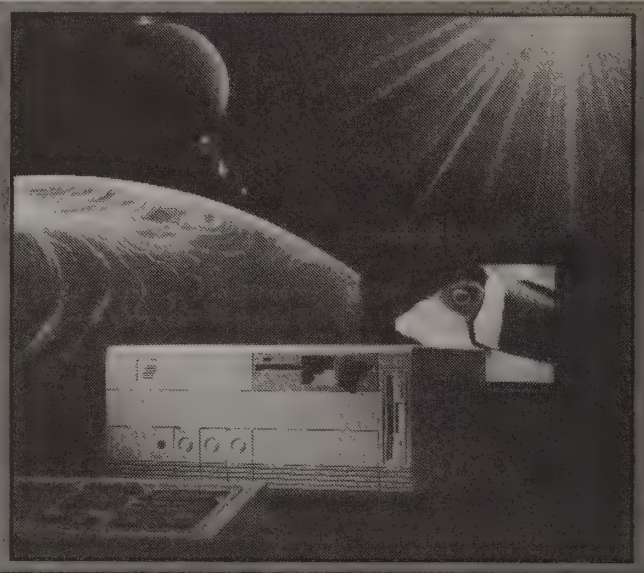

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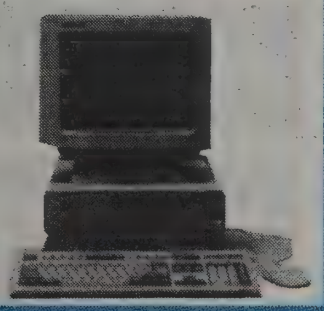

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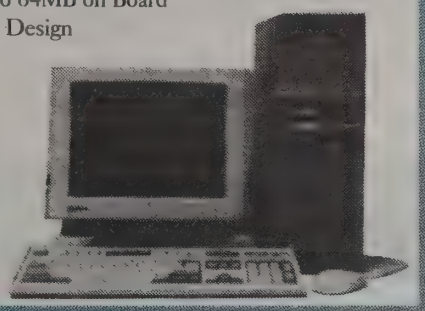

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- 130 MB 15ms Maxtor IDE Hard Disk
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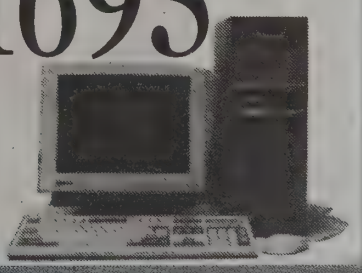

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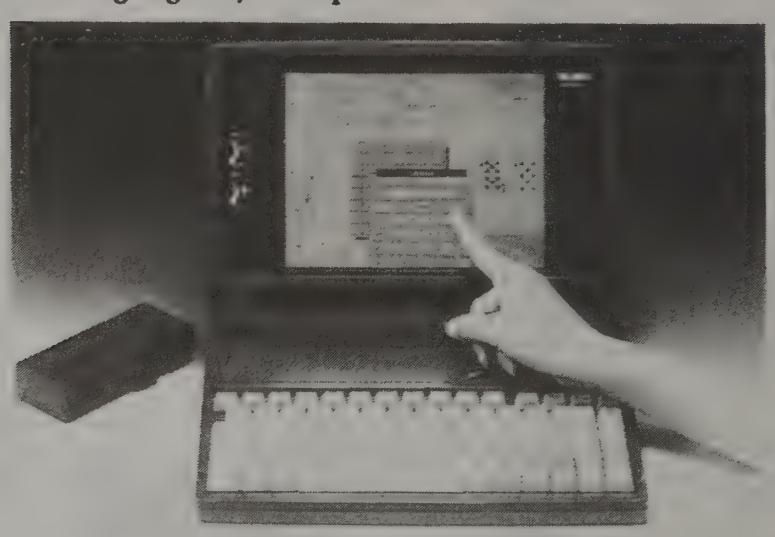

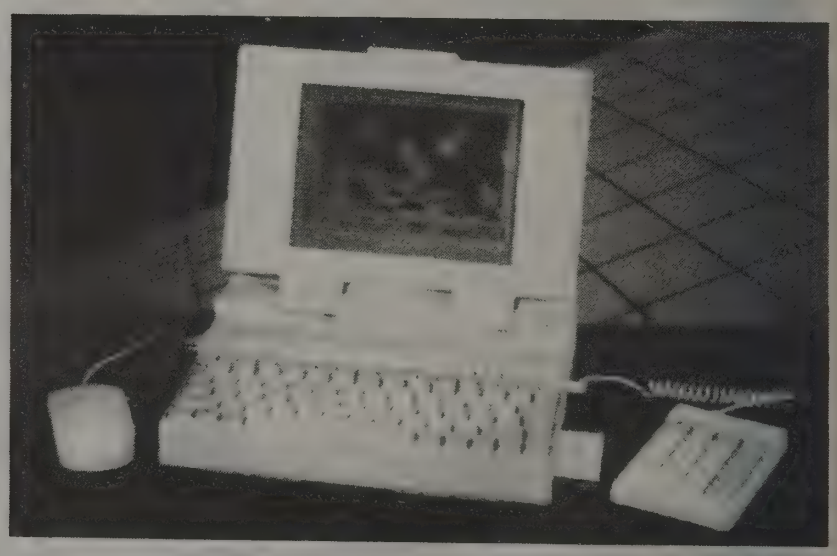

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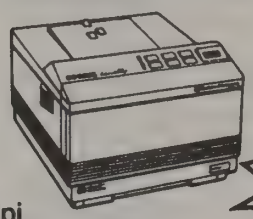

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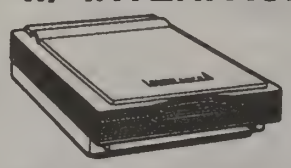

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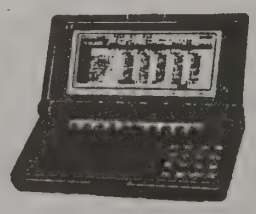

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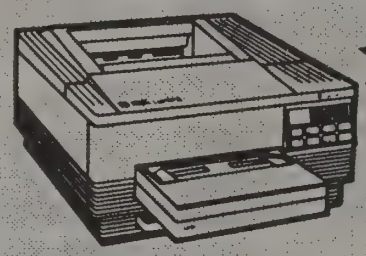

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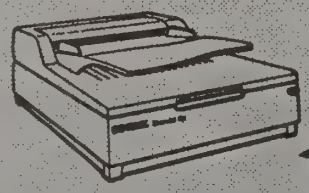

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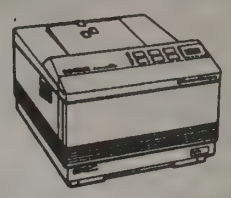

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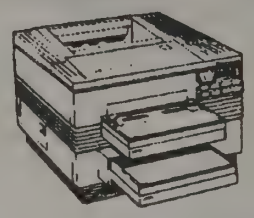

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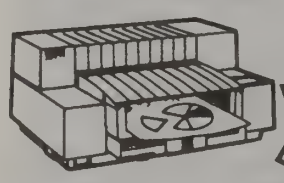

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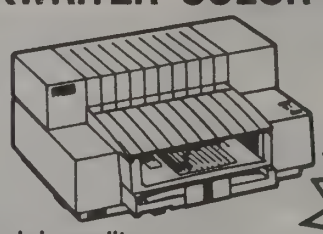

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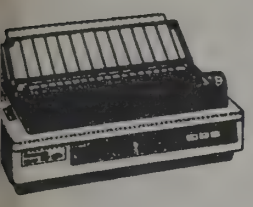

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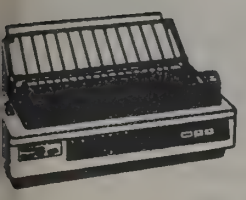

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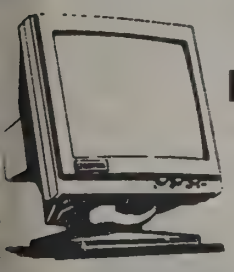

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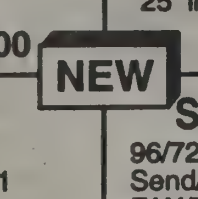

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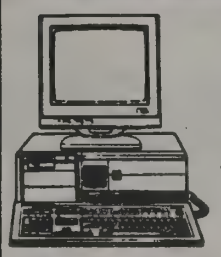

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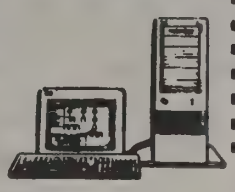

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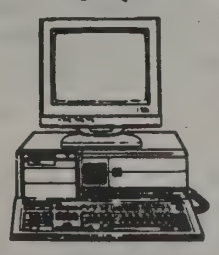

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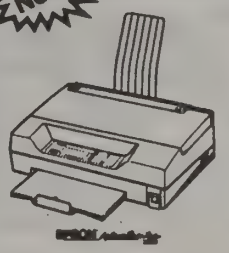

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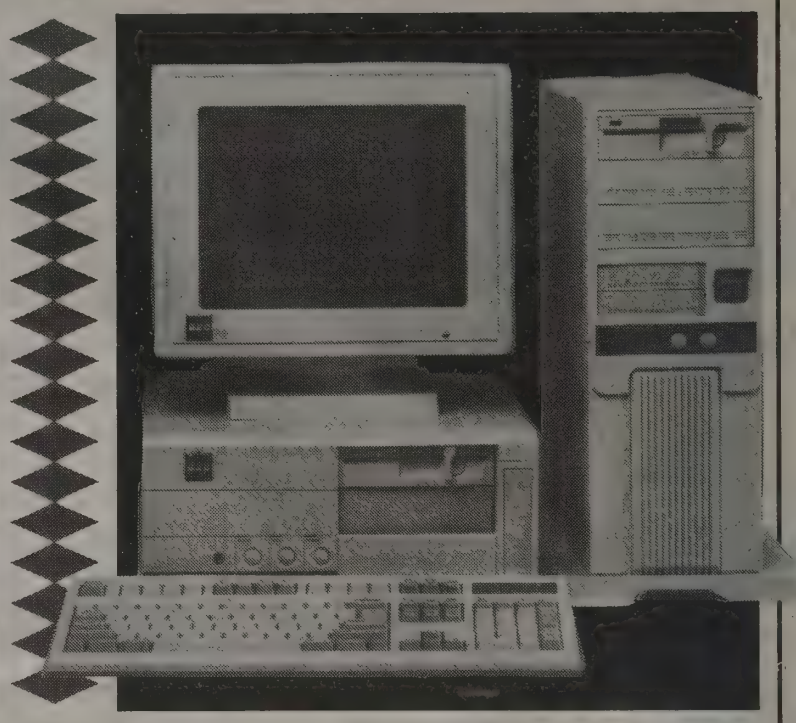

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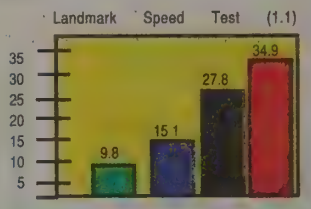

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5 pm

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WEDNESDAY, JULY 22

9 am

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1 pm

Why Have a Computer in the Classroom?
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OFOTO The Natural Look In Scanned Photos

You Don't Have To Settle For "Computerized" Images Any More

BY TONY REVEAUX

Light Source's Ofoto scanning software is able to interpolate images scanned from photographs and deliver black-and-white hardcopy prints showing the credibly smooth tonal ranges that we associate with photography. Ofoto introduces a basic user level that offers point-and-shoot simplicity, eliminating the need of the usual trial-and-error process of multiple passes. Instead of what we've come to expect from digitized images, with their characteristic "computerized" stylized look, Ofoto scans look like "normal" photographic images.

On the right side of each scan, Ofoto. On the left, Microtek Black and White.

"WORTH A THOUSAND WORDS"

The Ofoto package includes a copy of Rick Smolan's 68-page book Worth a Thousand Words: Scanning for the Real World. Smolan, author of projects such as *A Day in the Life of California*, is one of the founders of Light Source and the Ofoto system.

The book reflects the esthetic integrity of the well-laid-out documentation and theOfoto product itself, providing a collection of case studies of the variety of ways in which photographic images used in desktop applications can be valuable enhancements. You can drop a photo in a letter, fax, proposal, mock-up, comp, newsletter, real estate listing, sales flyer, brochure, instructional manual, term paper, inventory, or personnel file. Often this is a far more effective method than text for conveying information.

EASY SCANS

Ofoto automates the scanning experience in a similar manner to that of a point-and-shoot, auto-focus auto-exposure camera. The scanning algorithms of Ofoto interpolate the reading; that is, mathematical formulas in the programming interpret and sort out the combinations of light and dark reflections that the scanner perceives.

Other scanning programs offer you parameters to set, then require you to go through much trial and error, usually many prescans and resettings until it looks good. Ofoto has controls like these too, where you can adjust threshold, contrast and brightness, and bit-depth for line art, though it doesn't have a gamma control or the ability to spec out highlight areas. However, when you select the Autoscan command, Ofoto automates most of these concerns. It "looks at" the image through the scanner, and determines if it is line art or a photo, and what internal settings to use. It's as if your car had not only cruise control, but radio-controlled steering as well.

The result is a smooth image that is usually right on the money the very first time. The more demanding your professional needs, the more likely it is that you'll need to move that Ofoto scan into an image retouching program like Adobe Photoshop or Silicon Beach's Digital Darkroom.

I use Ofoto through a Microtek 600ZS scanner on a Macintosh IIcx with 8MB. The Microtek Black & White DA scanning software bundled with the machine is a high quality application, and a good benchmark for scans. I still use it for line art because of its handiness and speed. But Ofoto is the only program (thus far) that has those magic algorithms.

I had a request from a San Francisco theater company to scan some 1940s *film noir*

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Tony Reveaux, a San Francisco-based consultant, is the editor of Computer Publicity News *and a contributing editor for* Artweek, *and writes the "MediaScan" column in* Film/TapeWorld. *He can be reached via Usenet (luna@well.sf.ca.us) or MCIMail 290-3008.*

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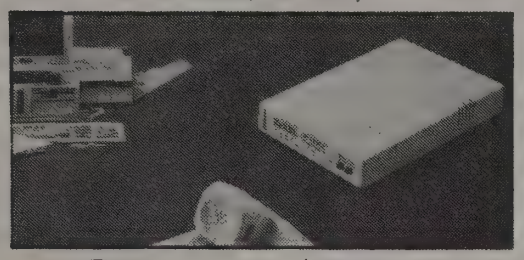

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movie stills from a book to make quick slides for a performance. Under these conditions, you get moire patterns on the scans of halftone prints; these can be eliminated when you go to make next-generation prints by setting the halftone controls. If I'd had Ofoto, which subdues the moires, then we could have gone from disk files directly to slides using a film recorder at a service bureau, with the benefits of speed and economy.

Ofoto's desktop scanning controls include many refinements that make the scanning experience even easier. No matter how often you use a scanner, there will always be those times when you place the original on the platen and discover in the prescan that it is crooked and out of alignment. Ofoto has an autostraighten function with its Straighten tool. It is like a rotation tool (and performs that function also) but with a grid structure, allowing you to reorient the image in the software. Its tool palette also includes a zoom control, as well as a pencil, eraser, lasso, and a selection rectangle to restructure your image internally beyond cropping. It has onboard LZW compression for saving files in TIFF, and it has Apple's extension to the PICT file format for use with its QuickTime Image Compression Manager. You can also select MacPaint and EPS file formats.

GREAT PRINTS

As desktop digital imagery has matured, it has begun to catch up with the closed system technology of professional commercial printing houses. From the photography of the original negative to the plates, press, and paper, professional printers exercise rigorous measurement and control of the process from the very beginning to the final binding. With the display- and output-matching color calibrators offered by RasterOps and SuperMac, and Savitar's ScanMatch software program, our control of the finishing stages of digital imagery on the desktop has become much more effective.

A core strength of Ofoto is not only its smoothly automated scanning interpolation algorithms, but its ability to smooth-talk the printer. The Adaptive Calibration Gray Chart is built into the program. Like everything else from Light Source, this advanced feature—which can be so, so tricky—is completely automated here. It gives you the power to customize settings for as many different output printing devices as you're likely to use. You may want to have one setting for a creaky ImageWriter at the office that you use for rough copy proofs, another for the LaserWriter IIg at your favorite service bureau, and yet another for the Linotronic 300 at your publisher's volume printer.

Ofoto's Autoscan function "looks at" the image through the scanner, then determines if it is line art or a photo, and what internal settings to use. It's as if your car had not only cruise control, but radio-controlled steering as well.

You create the gray chart beginning with selecting the printer type. The menu of supported printers is extensive and even includes fax modems. The New Printer dialog box allows you to enter the dpi (or lpc, lines-per-centimeter) and PostScript compatibility information under its name, and the device will be added to the menu. If the printer is connected to your computer, you can print the chart directly. If the printer is located elsewhere, you can save the chart as a document to disk. Take the disk to the site and make a print of the chart. Return the print of the gray chart to your scanner, and scan it into Ofoto. There, the new calibration is saved as a menu selection for a save and/or print command. You may want to fine-tune things even further, by having one calibration version denoted for documents printed from say, PageMaker, and another for Photoshop.

As good as a one-off scan and print from the Auto setting of Ofoto is compared to other scanning programs, it really does make a difference if your document is calibrated for the designated printer. As a test, I chose a still of Charlie Chaplin in *Modern Times* for the wide tonal stretch between the light foreground ranges in the facial modeling against the layers of dark background elements. While the uncorrected print seemed acceptable at first blush—we've become accustomed to this quality—the calibrated, tone-corrected print was dramatically better. The first thing that stood out was the revelation of detail in the background that had been darkened over in the first print. Charlie's facial detail displayed a smooth, continuous tone without the "clowning" patterns of contrast discontinuities.

While Ofoto will liberate your communications from the jaggies and crunchies of obvious digitization, you shouldn't expect the image that comes out of your LaserWriter to *be* a photograph. Ofoto goes the distance, but it doesn't go that far. Also, the paper is different. Most photo halftones are printed on coated or semi-coated stock. A coating slip made from china clay and other stabilizers and adhesives gives it a fine finish that allows the ink to sit on top of it and stay—as in the *Worth A Thousand Words* book. Normal, uncoated printer paper keeps the ink on by letting some of it soak into the pores and fibers of the stock, with inevitable dispersion.

However, Ofoto offers significant advantage in that it enables the average user to include halftones in documents where, before, they may have been considered too crude.

The Windows version of Ofoto has just shipped (both Mac and Windows versions are $395), and a version for color scanning is due in the fall. Judging from what Light Source has done for the grayscale world, it will be very interesting to see how well they can automate the three-times-harder color scan. With the continuing affordability of color scanners and printers, there should be a lot of colorful Ofoto opportunities out there. ■

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The Raines Road Show, And Other Spring Follies

BY DAVID MORGENSTERN

BMUG

What a month to be a BMUG member! Raines Cohen, one of BMUG's founders and board members, is off on his honeymoon. A trip to Hawaii, or Lost Wages, Nevada, might suffice for the rest of us, but not for a BMUG ambassador and bicycle fanatic. The honeymoon will consist of Raines bicycling 3000 miles across the continent. He will pedal his way into the BMUG booth at the Boston Macworld Expo in August. This colossal effort is being called the BMUG Tour: Raines on the Road.

Somehow Raines was able to persuade Kandy Arnold, his bride-to-be, that they'd have a terrific time dropping in on over a dozen user groups as they go from town to town. He must be the first person to successfully use the old "we can go to Europe any old time" line. She'll be pacing Raines in the tour support van, filled with old BMUG newsletters and tie-dyed T-shirts—gifts for the natives. Kandy is an excellent writer, so perhaps she's hoping to place the story in the ride-and-tell tabloids.

Raines is mounting the BMUG video camera to the nose of his bicycle. Portions of the trip will be digitized and featured in a later volume of our QuickTime CD-ROM series, the TV-ROM. We'll also be receiving on-the-road phone reports at the weekly BMUG meeting.

Copyright © 1992 by David Morgenstern. All rights reserved. *David Morgenstern believes that computers and BMUG can cultivate a positive change in the world. He volunteers time at BMUG, when he's not working his "regular job," writing, or prowling around the BMUG Bulletin Board. He can be reached through the BMUG office, AOL: daviD eM, CIS: 72030,1607, and Internet: davidm@sfsuvax1.sfsu.edu.*

SOLID FOOL'S GOLD

Back in April, I called up Steve Costa, BMUG director, with some real hot news. PowerBook batteries were starting barbecues, with their owners as menu items. It seemed that some user's batteries had been floating loose in a backpack, and some metal object had crossed the exposed terminals. Apple said keys or paper clips could cause the problem, resulting in a smoldering fire, or at least a hot spot!

Steve's take on this information was that it was a typical Silicon Valley hacker April Fool's joke. He swore that he had personally tested this by holding a paper clip on the terminals, and had not seen any smoke signals. I couldn't find a braces-wearing volunteer to step forward and test the rumor at a BMUG meeting.

Wouldn't you know that the story would turn out to be true!

Apple announced that it is offering free protective cases for the replaceable battery packs. After May 1992, all Apple PowerBook rechargeable batteries will be sold with the case included. It's also comforting to know that you'll never have to rub twigs together if you're lost in the woods.

After May 1992, all Apple PowerBook rechargeable batteries will be sold with the case included. It's also comforting to know that you'll never have to rub twigs together if you're lost in the woods.

There was honest April Fool's fun down at Apple headquarters. When walking into an elevator, people were greeted by a sign pointing to a microphone, requesting them to state the floor they wished to go to. Everyone thought that someone was listening to their requests and then controlling the elevator. They got part of it right. The "person" listening to the numbers was a Macintosh computer! Oscar, Apple's voice recognition software was on the other end of the microphone. Going up.

TRIVIA THE TATTOOED LADY

As promised last month, the Second Annual MacTrivia Test (Part Two). This is the hard part of the quiz, so don't let your score disturb your self-esteem. The test covers general computer knowledge, as well as the Mac-specific.

Anyone with a perfect score—Get a life!

ORIGINS OF THE SPECIES

1. The first computers were

a) incredibly complicated mechanical devices.
b) filled with thousands of vacuum tubes.
c) people that counted on their fingers and toes.

2. Which of the following are actual error messages from programs?

a) Sorry, I don't know how to help in this situation. Maybe you hould try asking a human?
b) You can't do that in horizon tal mode.
c) An error has occurred on the error logging device.
d) All of the above.

3. In 1947, the leading experts predicted that no computer would ever need more than

a) 20K of memory.
b) 200K of memory.
c) 20,000 vacuum tubes.

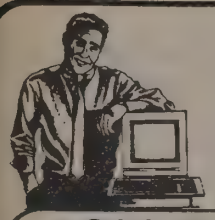
4. The word *Kludge* means

a) computer sludge.
b) mid-level bureaucrat in the Ku Klux Klan.
c) a clever piece of programming.

IN YOUR INTERFACE

5. There are three classes of alert boxes on the Macintosh. They are

a) Sloth, Envy, and Gluttony.
b) Stop, Look, and Listen.
c) Note, Caution, and Stop.



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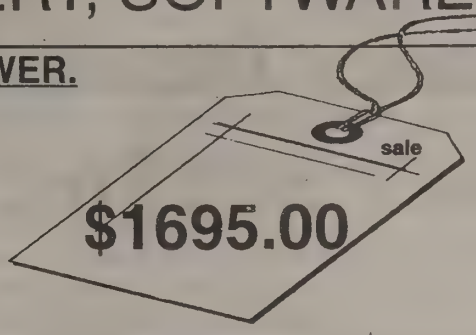

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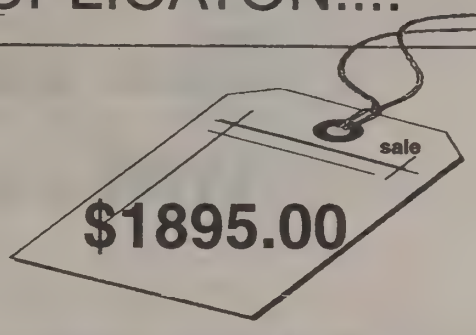

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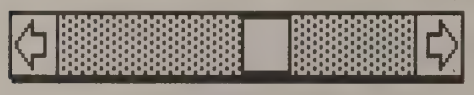
6. If you see a folder called Rescued Item from... in your System Folder, you have

a) crashed.
b) undergone a religious experience.
c) stepped over into theTwilight Zone.

7. Scroll bars are used to change the part of a document shown on the screen. They consist of two scroll arrows on either end and a scroll box that slides along a long, gray rectangle. What is the gray part called?



a) The Dead C++ Scrolls.
b) The scroll path.
c) The gray area.

8. The Apple Desktop Bus (ADB) is the usual way to input into a Macintosh. How many ADBs does a standard Macintosh computer have?

a) One.
b) Two.
c) Sixteen.

9. What is the origin for the Command key (that's the one with the Apple and the four interconnected loops)?

VIRUS DETECTION

10. The Peace virus made Macintosh and computer history by

a) being the first Macintosh virus.
b) being the first virus shipped in commercial software.
c) being the first virus whose programming was contracted out by he virus developer.
d) all of the above.

11. The very first computer virus was

a) the head cold suffered by Ada Byron, the world's first programmer.
b) "created" by bookworms eating through stacks of keypunch cards.
c) something that infected the military computer networks.

12. A metavirus is

a) a supervirus that can infect any system regardless of maker.
b) a pantomime virus.
c) the product of metaprogramming techniques.

ANSWERS—NO CHEATING!

1. c) The word "computer" comes from a class of human workers: Computers. It's ironic that the first group of workers displaced by the computer were computers, people that counted things for a living. They would grind out the calculations needed with brain power, assisted by fingers, toes, pencil, and paper.

2. d) Programmers have a lot of fun with funny error messages. The best ones were from the 1970s, when the audience was predominantly other programmers. Many of the messages had an existential twist, like the networking "Go away. You don't exist." Most commercial software for personal computers has been sanitized, but that doesn't stop "Keyboard not present, Press any key" nonsense from occasionally sneaking through.

3. a) It's difficult for us to believe that computer scientists could actually believe that any problem could be solved in 20K of memory—especially when new Macintosh machines will ship with 4MB standard. Even the smartest technoid can underestimate the ever expanding need for more RAM and storage.

I remember an early BMUG meeting where Reese Jones (BMUG's first president, now chairman of Farallon) claimed that anyone who needed more than a 20MB hard drive was pirating too much software. All computer predictions must be taken in their operational context. That was a time when an application and a system could fit on a 400K floppy disk.

4. c) The word is supposedly from the German word *kluge*, meaning clever or cunning. It has the sense of being a bug repair that somehow works, but is not something to hang on the wall. It's pronounced like the word *clue*.

5 c) Note, Caution, and Stop are each used for different kinds of situations, and have different icons. Note gives information about situations that have no drastic consequences. The usual response is hitting an OK button. Caution calls attention to operations that may give you grief if you continue. The default is often set to cancel. Stop calls attention to some serious problem that requires a user decision

6. a) One of the new additions to the System folder in System 7 is the Rescued Item folder. When you use applications on your Mac, temporary files are often created. These are stored in an invisible folder called Temporary Items. If you crash, the files in the Temporary Items folder are supposed to be moved over to the Rescued Items folder. Of course ,you have to know to look for the folder and the files...

7. c) I know it's hard to believe that such a logical device as a Macintosh could have a gray area (grey in the UK). For you know-it-all programmers that don't believe that this is correct—look in the Human Interface Guidelines!

8. a) What a trick question! Although there are a couple of ADB *ports* on the back of the computer, there's only one bus. Although the bus specification says it can support sixteen devices, you shouldn't chain more than three devices on each of the ports.

9. The symbol is called "fornminne" in Swedish, translated to "things to remember, of old age." It is also the Cross of Saint Hans. In the Nordic countries it's used to mark old ruins, Viking graveyards, and other sites of cultural and historical value.

Cross of Saint Hans. In the Nordic countries it's used to mark old ruins, Viking graveyards, and other sites of cultural and historical value.

10. d) Can you believe it? This is one of the strangest stories in virus history. Richard Brandow, publisher of the Canadian Macintosh magazine, *MacMag*, decided to spread a "universal message of peace." The vehicle for this message was a computer virus. On March 2, 1988 (the first anniversary of the introduction of the Mac II and SE models), thousands of Macs had the message for peace displayed on their monitors. The virus had the good sense to then delete itself.

Brandow hired a young programmer from Arizona, Drew Davidson, to write the virus. The kid thought the idea was "neat." Since this was the first Mac-based virus, there was no stopping the thing. It even showed up in shipping copies of Marc Canter's tutorial demo for the graphic program, Aldus FreeHand.

Like many nuisance virus attacks today, the Peace virus did not intend to cause harm, but may have interfered with some other normal process happening at the time of infection, or message display. At the time, a Seattle district attorney issued extradition orders, and a warrant, subject to arrest upon entry to the US, for Brandow.

11. c) The Creeper infected the military/educational/corporate network called ARPAnet in 1970. It left a message, "I'm the Creeper, catch me if you can!"

It was a demonstration program that "got out of control." This is the first use of the out-of-control excuse that seems to be the first words out of virus authors when they're caught nowadays. The Creeper was followed by the Reaper virus, that looked for the Creeper and removed it.

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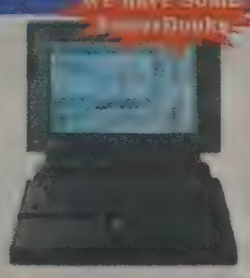

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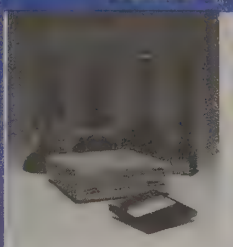

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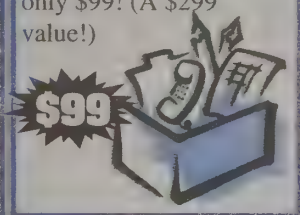

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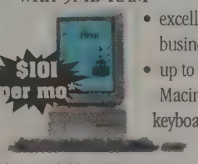

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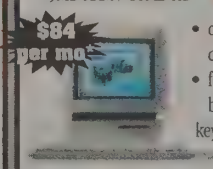

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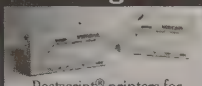

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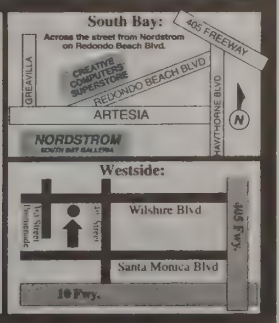

12. b) In 1988, a message was posted on the Internet that warned that a virus was hidden in a tax template. This was the message:

"*Warning!* A serious virus is on the loose. It was hidden in the program called 1988 Taxform that was on this bulletin board last year... By now it is possible that your system is infected even if you didn't download this program, since you could have been infected indirectly.

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Like any growing organization, it is many different things to its thirteen thousand international members. BMUG supports many Special Interest Groups (SIGs), a Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Our motto continues to be: We're in the business of giving away information.

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6–9 pm (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

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RESOURCES

Calendar Of Events

JUNE

June 19 MS Word On The Mac Class. Glendale. Computer Education International. Call: (818)242-0828.

June 19–21 Summer Shareware Seminar. Indianapolis, IN. Public Brand Software. Call: 1-800-856-4144.

June 20 DOS/Hard Disk Management Class. Glendale. Computer Education International. Call: (818)242-0828.

June 20 Intro To The IBM PC Class. Monrovia. The Organizers. Call: (818)303-3311.

June 21 Computer Show & Sale. Scottish Rite Center, San Diego. MarketPro Shows. Call: (415)388-8893.

June 23–25 Seybold Digital World Conference And DemoCenter. Beverly Hills. Seybold Seminars. Call: 1-800-777-6650.

June 23–25 Tenth Annual PC Expo. New York. Bruno Blenheim, Inc. Call: 1-800-829-3976.

June 24 Beginning WordPerfect Class. Monrovia. The Organizers. Call: (818)303-3311.

June 24–September 9 Intro To C Programming Language Class. Los Angeles. UCLA Extension. Call: (310)825-4100.

June 26 DOS Class. Monrovia. The Organizers. Call: (818)303-3311.

June 26 MS Excel On The Mac Class. Glendale. Computer Education International. Call: (818)242-0828.

June 27 Computer Show. LA Fairgrounds, Pomona. Computer Marketplace. Call: 1-800-800-5600.

June 27 Lotus For Windows Class. Glendale. Computer Education International. Call: (818)242-0828.

June 28 Computer Show. Sherman Square Entertainment Center, Reseda. Computer Marketplace. Call: 1-800-800-5600.

June 28 Computer Show & Sale. Burbank Hilton Convention Center. Richard James Corp. Call: 1-800-433-7469.

June 28 Computer Show & Sale. Pasadena Center. MarketPro Shows. Call: (415)388-8893.

June 29–July 1 Database World Conference & Expo. Boston. DCI. Call: (508)470-3880.

JULY

July 6–10 International Conference On APL. St. Petersburg, Russia. ACM, FinnAPL & SIGAPL. Call: Lynne C. Shaw, (212)836-8644. Email: Lynne_Shaw@mts.cc.wayne.edu.

July 7–10 Informix Worldwide Users Conference. San Jose. Informix. Call: 1-800-247-0262.

July 9 & 16 Intro To The Mac Class. Glendale. Computer Education International. Call: (818)242-0828.

July 10 Beginning Lotus Class. Monrovia. The Organizers. Call: (818)303-3311.

July 10 Beginning WordPerfect DOS Class. Northridge. CSUN. Call: (818)831-5064.

July 10 MS Word On The Mac Class. Glendale. Computer Education International. Call: (818)242-0828.

July 11 Beginning WordPerfect Class. Monrovia. The Organizers. Call: (818)303-3311.

July 11 Computer Show & Sale. Anaheim Stadium. Richard James Corp. Call: 1-800-433-7469.

July 11 DOS Class. Monrovia. The Organizers. Call: (818)303-3311.

July 12 Computer Show & Sale. Glendale Civic Auditorium. Richard James Corp. Call: 1-800-433-7469.

July 12–17 Tenth National Conference On Artificial Intelligence. San Jose. AAAI. Call: (415)328-3123. Email: ncai@aaai.org.

July 13–14 Database/Word Processing Software Workshop. Los Angeles. Symantec Training Group. Call: 1-800-786-8620.

July 14–17 Hands-on PC Configuration & Troubleshooting Course. Los Angeles. Learning Group International. Call: Kim Sisson, 1-800-421-8166.

July 15–16 Borland World Tour Showcase And Seminar. Los Angeles. Borland International. Call: 1-800-942-8810.

July 15–17 Project Management Software Workshop. Los Angeles. Symantec Training Group. Call: 1-800-786-8620.

July 17 Intro To The Mac Class. Glendale. Computer Education International. Call: (818)242-0828.

July 18 Computer Show. LA Fairgrounds, Pomona. Computer Marketplace. Call: 1-800-800-5600.

July 18 DOS/Hard Disk Management Class. Glendale. Computer Education International. Call: (818)242-0828.

July 18 Intro To The IBM PC Class. Monrovia. The Organizers. Call: (818)303-3311.

July 19 Computer Show. Sherman Square Entertainment Center, Reseda. Computer Marketplace. Call: 1-800-800-5600.

July 19 Using The Computer To Schedule A Film Workshop: The Movie Magic Scheduling Program. Los Angeles. UCLA Extension. Call: (310)825-9064.

July 20–22 Sun Open Systems Expo. Anaheim. Publication and Communications, Inc. Call: 1-800-727-EXPO.

Continued

JUNE 27

COMPUTER SHOW

Pomona

Computer Marketplace computer shows feature hundreds of exhibits with thousands of products. Admission is $6.00 and shows are from 10:00 am to 5:00 pm. Los Angeles County Fairgrounds (Fairplex), Pomona. Call: 1-800-252-7927.

SUNDAY COMPUTER GRAPHICS CLASSES

UCLA Extension

For the convenience of those whose busy schedules prevent them from taking continuing education classes on weekdays or Saturdays, UCLA Extension offers five computer graphics courses on Sundays this summer. The courses are: Basic Macintosh Operations, Intro to Macintosh Graphics, Macintosh Word Processing and Graphics, Color on the Desktop, and Desktop Publishing with PageMaker. Call: UCLA Extension, (310)206-1422.

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Exit Highway 10 at Ganesha/Fairplex Drive.
Go North to McKinley and turn right.
Then turn left on White Avenue to Gate 14.

BUENA PARK
SEQUOIA CONFERENCE CNTR.
Take the Beach Blvd. Exit off the 91 Freeway and go 1 block North to 7530 Orangethorpe.

RESEDA
SHERMAN SQUARE ENTERTAINMENT CNTR.
From 101 Freeway: take the Reseda off ramp. Turn left (if travelling E.) on to Reseda Blvd. to Sherman Way, turn right, one block, to Canby Street. 18430 Sherman Way.

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June 28, 1992 SUNDAY
Sherman Square Entertainment Center, Reseda

July 18, 1992 SATURDAY
L.A. Fairgrounds (Fairplex), Pomona

July 19, 1992 SUNDAY
Sherman Square Entertainment Center, Reseda

August 8, 1992 SATURDAY
L.A. Fairgrounds (Fairplex), Pomona

August 9, 1992 SUNDAY
Sherman Square Entertainment Center, Reseda

August 29, 1992 SATURDAY
L.A. Fairgrounds (Fairplex), Pomona

August 30, 1992 SUNDAY
Sequoia Conference Center, Buena Park

SPECIAL 2-DAY SHOW!
October 10 & 11, 1992 SATURDAY & SUNDAY
L.A. Fairgrounds (Fairplex), Pomona

November 7, 1992 SATURDAY
L.A. Fairgrounds (Fairplex), Pomona

November 8, 1992 SUNDAY
Sherman Square Entertainment Center, Reseda

November 28, 1992 SATURDAY
L.A. Fairgrounds (Fairplex), Pomona

ALL SAN DIEGO SHOWS HAVE BEEN CANCELLED

Calendar Of Events continued

July 21–24 Hands-on UNIX In C Course. Los Angeles. Learning Group International. Call: Kim Sisson, 1-800-421-8166.

July 24 WordPerfect Level II Class. Glendale. Computer Education International. Call: (818)242-0828.

July 25 Computer Show & Sale. CSU, Northridge. Richard James Corp. Call: 1-800-433-7469.

July 26 Computerized Film Budgeting Workshop: The Movie Magic Budgeting Program. Los Angeles. UCLA Extension. Call: (310)825-9064.

July 26–31 SIGGRAPH '92. Chicago. ACM. Call: (312)321-6830. Email: info92@siggraph.org.

July 27–28 The Managing Enterprise Networks Conference. Boston. DCI. Call: (508)470-3880.

July 28 WordPerfect On The Mac Class. Glendale. Computer Education International. Call: (818)242-0828.

July 28–31 Effective Skills For Technical Managers Course. San Diego. Learning Group International. Call: Kim Sisson, 1-800-421-8166.

July 29 Intro To PCs Class. Glendale. Computer Education International. Call: (818)242-0828.

July 29–30 MS Word On The Mac Class. Glendale. Computer Education International. Call: (818)242-0828.

July 30 MS Excel On The Mac Class. Glendale. Computer Education International. Call: (818)242-0828.

AUGUST

August 2 Computer Show & Sale. Glendale Civic Auditorium. Richard James Corp. Call: 1-800-433-7469.

August 6 & 13 DOS/Hard Disk Management Class. Los Angeles. Computer Education International. Call: (818)242-0828.

August 6 & 13 Intro To PCs Class. Glendale. Computer Education International. Call: (818)242-0828.

August 7 Windows Class. Glendale. Computer Education International. Call: (818)242-0828.

August 8 Computer Show. LA Fairgrounds, Pomona. Computer Marketplace. Call: 1-800-800-5600.

August 8 WordPerfect Level II Class. Glendale. Computer Education International. Call: (818)242-0828.

August 9 Computer Show. Sherman Square Entertainment Center, Reseda. Computer Marketplace. Call: 1-800-800-5600.

August 10–13 Fifth C++ Technical Conference. Portland, OR. USENIX. Call: (714)588-8649.

August 10–14 LUV '92: Second International LISP Users And Vendors Conference. San Diego. Assoc. of LISP Users. Call: Laura Lotz, (215)651-2990.

August 10 & 17 DOS/Hard Disk Management Class. Orange County. Computer Education International. Call: (818)242-0828.

August 11–14 OS/2: Comprehensive Hands-on Intro Course. Los Angeles. Learning Group International. Call: Kim Sisson, 1-800-421-8166.

continued on page 150

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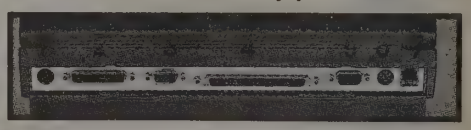

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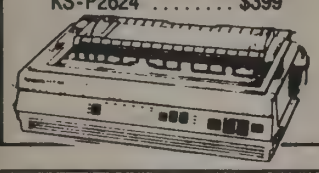

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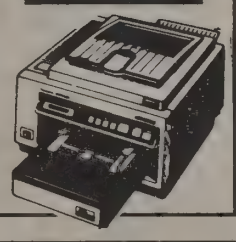

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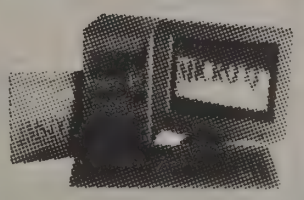

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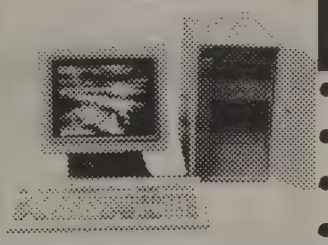

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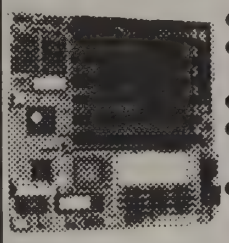

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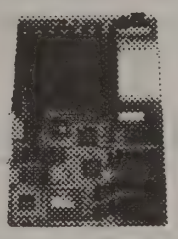

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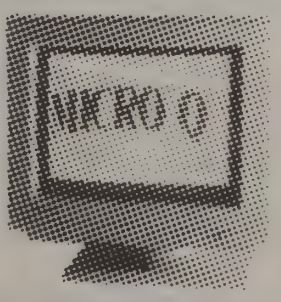

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USER GROUP NETWORK

BULLETIN BOARDS

213

AAC-Info Net. (213)294-9729. 8-N-1, 300/1200/2400. New Afro-American news, information, messages, and public forum. Sysop: Selmo Belisle. [Exp. #98.]

Infinite Diversity Infinite Combination: The BBS. (213)296-6755. 10:00 pm–6:00 am, 300/1200/2400. This board is for writers, artists, and Star Trek clubs. Sponsored by Infinite Savant Publishing and Sundance Writers' Guild. [Exp. #98.]

LAAUGLine. (213)387-1002. 24 hrs., 300/1200/2400. Amiga. Sysop: Thom Irwin. [Exp. #99.]

La Mirada's The Modems Delight BBS. (213)944-1221. 24 hrs., 300/1200/2400/9600. Multi-interest files, doors, games, and fun. Running Telegrad BBS v2.7, BlueWave Echo-mail, 1:102/430 Fidonet. Sysop: Ronald Dishon. [Exp. #99.]

Lynzie's Motherboard. (213)848-2700. 8-N-1, 24 hrs., 300/1200/2400. 32 lines, multiuser/group & private chats, 2GB, email, public forums, library, and matching. More local numbers available online. Sysop: Lynzie Flynn. [Exp. #98.]

Megabytes BBS. (213)221-6379. 8-N-1, 24 hrs., 300/1200/2400. IWindows shareware and DOS utilities. Free. Sysop: William Rivas. [Exp. #98.]

Modem Butterfly's Connection. (213)264-6900. 8-N-1. Chatting, pontificating, parties, 800MB. [Exp. #97.]

Original Apple Corps BBS. (213)454-4660. 300/1200/2400. Apple II support. Free. Sysop: Sheila Dowst. [Exp. #99.]

Royal Rook BBS. (213)934-2812. 8-N-1, Mon.–Fri., 6 pm–11 am. Telegard. Musicians and IBM Tech Support. Free, reg required. Sysop: Watcher. [Exp. #97.]

310

Amiga Artists Club & BBS. (310)590-9949. 8-N-1, 24 hrs., 300/1200/2400. UL/DL, 170MB, Art SIGs, Amiga bases, and online games. [Exp. #97.]

AmigaSerV BBS. (310)983-1600. 24 hrs., 1200/2400/9600. Amiga only! 670MB, 4-line rotary, 4200+ files, C-Net. Sysop: Ed Brown. [Exp. #98.]

Citizen America BBS. (310)453-7564. 8-N-1, 24 hrs., 300/1200/2400. Support for Citizen printers and computers. Sysop: Citizen America. [Exp. #98.]

Compu-Net! BBS. (310)823-3609. 300/1200/2400/9600. 1GB, 15 separate systems in one call. Adult, finance, sports, Windows, occult, IBM, and more. [Exp. #97.]

The Computer Handyman's BBS. (310)693-7907. 8-N-1, 300/1200/2400, 24 hrs. 12 Steps, BASIC programming, tech tips. Sysop: Alan Selmanaj. [Exp. #98.]

Drug Abuse Information (DIAMP). (310)825-3736. 8-N-1, 24 hrs., 300/1200/2400. Drug information, statistics, bibliographies, forums, email, downloads, and uploads. Free membership, reg. requested. Sysop: Greg Cason. [Exp. #98.]

The Forbidden Zone. (310)929-4460. 24 hrs., 300–16,800. 20MB PD transfers, games, taboo msg. base, fees optional. Sysop: Beltair [Exp. #99.]

Hatch.uucp. (310)822-3970. 1200/2400/9600. Usenet feeds, 1200 Newsgroups, worldwide internet email, domain addresses avail. Sysop: Mike Barnadett. [Exp. #97.]

Illusions BBS. (310)804-3324. 24 hrs., 1200/2400/9600. Nationwide network support, large file area, QWK, mail, and more. Sysop: Jim Walton. [Exp. #98.]

KBBS Los Angeles. (310)558-0145, 532-1700. 8-N-1, 300/1200/2400/9600. LA's busiest, with 32,000 channel chat, 13,000+ files, 32 lines, parties, over 3000 members. [Exp. #97.]

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LA Computer Society BBS. (310)475-8720. 8-N-1, 24 hrs., 2400 only. Full access to Computer Society members ($36/yr), message bases, SIGs, and club information. Sysop: Debbie Rhodes. [Exp. #98.]

LAMG (Los Angeles Macintosh Group). (310)559-MACS. 8-N-1, 24 hrs, 300/1200/2400/9600. So. Cal's busiest all Mac multiline BBS. 300MB+ of Mac nes, reviews, rumors, and more. [Exp. # 99.]

NightLine BBS. (310)419-4757. 8-N-1, 24 hrs., MS/PC-DOS and compatibles. GIFs, utils, Windows, etc. Free. Sysop: Lee Culver [Exp. #97.]

Original Apple Corps BBS. (310)454-4660. 300/1200/2400. Apple II support. Free. Sysop: Sheila Dowst. [Exp. #97.]

the original off-off broadway bbs. (310)453-7038. 8-N-1, 24 hrs., 300/1200/2400/9600. Non-subscription, text files/messages only. Using MajorBBS software and CompuCom Speedmodem. Sysop: James Gossage. [Exp. #98.]

Postergirls Swinger's Alternate Lifesytles BBS. (310)521-0171. 300/1200/2400. Multi-node, worldwide mail, messages on over 300 sub., 1.2GB. Free. Sysop: Haulin' Ass Chick. [Exp. #98.]

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South Bay Commodore Users Group (SBCUG). (310)643-8818. 24 hrs., 300/1200/2400. Graphics and library. Sysop: Jeffery Baldwin. [Exp. #97.]

619

Satang BBS. (619)364-0033. 8-N-1, 24 hrs., 300/1200/2400. 170MB online, Wildcat! IBM files & programs, religion and metaphysics. Sysop: Ed Shimko. [Exp. #97.]

714

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Lynzie's Motherboard. (714)776-4198. 8-N-1, 24 hrs., 300/1200/2400. 32 lines, multiuser/group & private chats, 2GB, email, public forums, library, and matching. More local numbers available online. Sysop: Lynzie Flynn. [Exp. #98.]

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FreeLink BBS. (818)713-1767, 713-8212. 300–38,400. Over 600MB plus CD-ROM, low-cal version avail. Modems are standing by to get your call. [Exp. #98.]

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USER GROUPS

ACCOUNTING

L.A. County Cougar Mountain Accounting Software User Group. Call: (818)788-2627. [Exp. #101.]

AMIGA

LAAUG—Los Angeles Amiga User Group. Meetings: 3rd Wed., 7:30 pm, Veteran's Memorial Auditorium, Overland Ave. & Culver Blvd. Many SIGs, rookies, monthly PD disks. Call: Kip Hammond, (310)390-3010. [Exp. #102.]

SBAD—South Bay Amiga Dudes/Dudettes. Meetings: 1st Thurs., 7:00 pm, South Bay Contemporary Museum of Art, Torrance. Call: Gordon Barbay, (310)376-7329. [Exp. #101.]

SOCK—South Orange Commodore Klub. Meetings: 3rd Sat., 9:00 am, Computer Guild, Suite 1003, 24001 Via Fabricante, Mission Viejo. New Location. Supports Commodore and Amiga, new users SIG. Call: Don, (714)830-2430. [Exp. #102.]

APPLE

Orange Apple Computer Club. Meetings: 1st Sat., 9:00 am, Orange Coast College, Chemistry Lab. Apple II supported. Call: (714)731-9243. [Exp. #99.]

Original Apple Corps, Apple II User Group. Meetings: 2nd Sun. Support for beginners through experts. Write: PO Box 90065, Los Angeles, CA 90009. Call: Fred Duffy, (310)475-8400. BBS: (310)454-4660. [Exp. #99.]

Tri-City Apple Users Group. Meetings: 3rd Thurs., 7:00 pm, Pasadena Central Library, 285 E. Walnut St. Friendly Apple II experts. Call: (213)258-0281. [Exp. #102.]

Valley Apple Computer Club. Meetings: 3rd Tues., 7:30 pm. Cleveland High School, 8140 Van Alden, Reseda. Apple II, II+, IIc, IIe, and IIgs. No Macs. Call: Bill, (818)988-1852. [Exp. #100.]

ATARI

ATESIG—Atari 8-bit SIG. Meetings: 145 Surf Pl., Seal Beach. Cooperative user group for Model Railroad applications. Call: (310)430-5433. [Exp. #100.]

RAM Atari ST User Group Of Ventura County. Meetings: 3rd Wed., 7:30 pm, Call: Tim, (805)389-0059 or write PO Box 112, Camarillo, CA 93011. [Exp. #102.]

South Bay Atari Computer Enthusiasts. Meetings: 2nd Tues., 7:30 pm, Lomita VFW Hall, 1865 W. Lomita Blvd. Active since 1985, novices & all skills welcome. Call: (310)375-4839. [Exp. #102]

CAD/CAM

Los Angeles Area AutoCAD User Group. Meetings: 4th Wed., 6:30 pm, Burbank Board of Realtor's Bldg., 2006 W. Magnolia Blvd., Burbank Meetings feature tutorials, Q&As, demos, hands-on, BBS, and newsletter. Call: M. Berman. (818)762-9966. [Exp. #98.]

COMMODORE

C128 West Commodore 128 User Group. Meetings: Covina & Santa Monica. Free membership. Large disk library. Call: John, (818)331-1589; Paul, (818)892-3859; BBS (714)598-1755 FidoNet. [Exp. #98.]

Commodore Helpers Of Long Beach. Meetings: 2nd Sat., 9:00 am. St. Timothy's Lutheran Church, Woodruff and Arbor in Lakewood. Supports 64/128 models. Call: Tom Hoy, (310)424-0508. [Exp. #99.]

Orange County Commodore Club. Meetings: 4th Sat., 11 am, Fidelity Federal Bank, 19900 Beach Blvd., (Newland Shpg Ctr) Huntington Beach. Call: Mike Moore, (714)668-9715. [Exp. #99.]

South Bay Commodore Users Group. Meetings: 3rd Thurs, 7:00 pm. SEC Redondo Generating Station, 1100 Harbor Dr. (across from King Yacht Harbor). Free and open to all who use or own Commodore computers and to those who would like to receive or exchange information on programs, applications, or hardware. Call: (310)324-8357. [Exp. #100.]

CORELDRAW

Association Of Corel Artists & Designers, LA Chapter. Meetings: Next to last Tues., 7:00 pm, Glendale Federal Bank Building, 401 N. Brand Blvd. An international nonprofit user group network for anyone using or interested in CorelDraw. Call: (310)452-5637. [Exp. #102.]

DESKTOP PUBLISHING

Southern California Ventura Publisher User Group (SC–VPUG). Meetings: Last Tues., 7:00 pm, 401 N. Brand, Glendale, Glendale Federal Bank Building. Product demos, Q&As, library

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ASSOCIATIONS

Black Data Processing Assoc., LA Chapter. Meetings: 4th Tues., 6:30 pm, ULTC, 7226 S. Figueroa St., Los Angeles. Call: (310)673-6522 or 1-800-727-BDPA. [Exp. #97.]

Data Processing Management Association. Meetings: 2nd Thurs., 7:00 pm. An organization composed of all levels of management personnel who have an interest in the field of information processing. Call: (310)549-9680 or (213)225-9210. [Exp. #101.]

Independent Computer Consultants Association, Los Angeles Chapter. Meetings: 1st Thurs., 6:00 pm. Prepaid reservation, $25, or at the door, $35. The LA chapter provides referral services. Call: (213)872-1811. [Exp. #101.]

Microcomputer Managers Association, Los Angeles Chapter. A forum for the discussion of issues relating to implementing and supporting microcomputer technology. Call: (213)243-6843. [Exp. #100.]

Orange County Association Of PICK Professionals. Meetings: 3rd Wed., 6:00 pm, Claim Jumper Restaurant, 18350 Brookhurst St., Fountain Valley. Dinner: Members, $20; nonmembers, $25. Without reservations add $5 additional. Call: (714)641-6347. [Exp. #101.]

The Software Council Of Southern California (SCSC). Meetings: Last Wed., 6:00 pm, Long Beach Airport Marriott, 4700 Airport Plaza Dr., Long Beach. SCSC was founded to further the interests of software development organizations, as well as companies that provide support and services to the local software industry. Call: (310)328-0043. [Exp. #98.]

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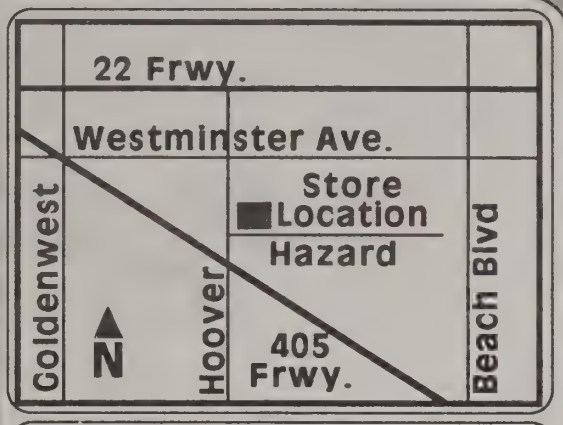

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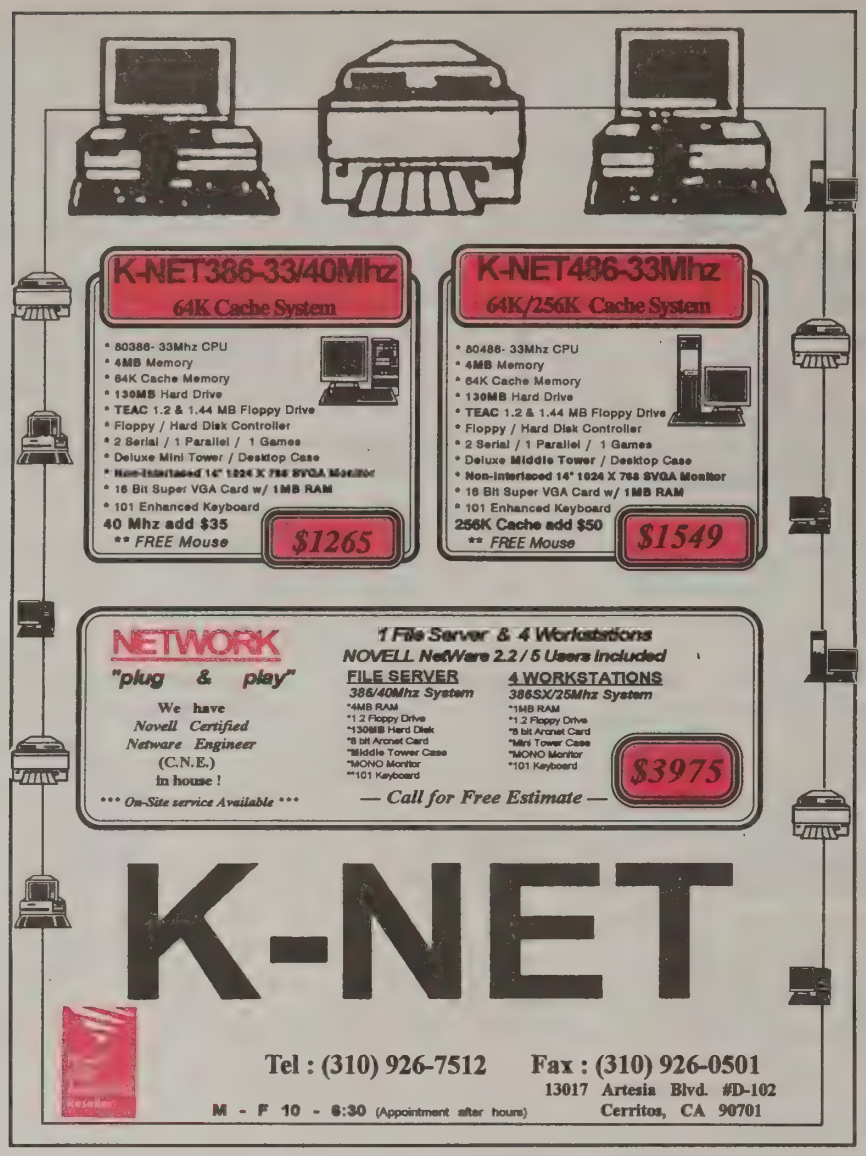

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SFV & LA Epson QX User Group. Meetings: 3rd Mon., 7:30 pm, The Meeting Place, Fallbrook Mall, Canoga Park. Call: Bill Winter, (818)347-7417. [Exp. #98.]

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Los Angeles Computer Society. Meetings: 2nd Tues., 7:00 pm, Culver City High School Cafeteria. Meetings are free and there are always live presentations and giveaways. Call: (310)473-6668. [Exp. #101.]

Orange Coast IBM PC User Group. Meetings: Last Sat., 9:00 am. Orange Coast College. Speakers, BBS, software library, newsletter, and SIGs. Everyone welcome. Call: (714)843-2048. [Exp. #99.]

Pasadena IBM User Group. Meetings: 3rd Wed., 7:00 pm, 2184 N. Lake Ave., Altadena. Speakers on hardware/ software, SIGs, library, and newsletter. Call: Steve Bass, (818)795-2300. [Exp. #102.]

Thousand Oaks Personal Computer Club (TOPCC). Meetings: 4th Thurs., 6:30 pm, Goebel Senior Adult Center, 1385 E. Janss Rd., Thousand Oaks. Call: (805)496-9699. [Exp. #102.]

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West Orange County Macintosh User Group (WOCMUG). Meetings: last Tues., 7:00 pm, F&M Bank, 12535 Seal Beach Blvd., in the Rossmoor Shopping Center. Visitors always welcome! Topics for beginning to advanced users. Call: (310)493-1240. [Exp. #100.]

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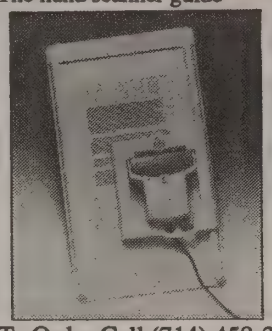

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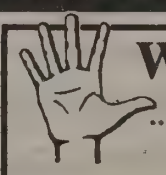

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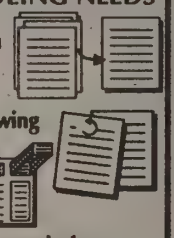

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Calendar Of Events continued

August 13 DOS/Hard Disk Management Class. Glendale. Computer Education International. Call: (818)242-0828.

August 14 Intermediate Lotus 1-2-3 Class. Glendale. Computer Education International. Call: (818)242-0828.

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August 21 MS Word On The PC, Level I Class. Glendale. Computer Education International. Call: (818)242-0828.

August 25–28 Intro To ISDN Course. Los Angeles. Learning Group International. Call: Kim Sisson, 1-800-421-8166.

August 27–29 The Third Annual Macintosh Summit Conference. Santa Barbara. UCSB Extension. Call: (805)893-4142.

August 28 MS Excel On The PC Class. Glendale. Computer Education International. Call: (818)242-0828.

August 29 Computer Show. LA Fairgrounds, Pomona. Computer Marketplace. Call: 1-800-800-5600.

August 29 Lotus 1-2-3, Advanced & Macros Class. Glendale. Computer Education International. Call: (818)242-0828.

August 30 Computer Show. Sequoia Conference Center, Buena Park. Computer Marketplace. Call: 1-800-800-5600. ■

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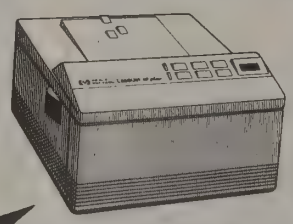

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- **120Mb Hard Drive (15ms)**
- AT IDE Controller
- 2 Serial, 1 Parallel, 1 Game
- SVGA Adapter w/1Mb
- 14" GoldStar SVGA Monitor .28
- Mini Tower Case w/220W
- 101 Enhanced Keyboard
- Hi-Resolution 3 Button Mouse

$1340

486DX-33 MHz System

- 486DX-33 64K Mother Board
- 4Mb RAM (70ns)
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486DX-50 MHz System

- 486DX-50 256K Mother Board
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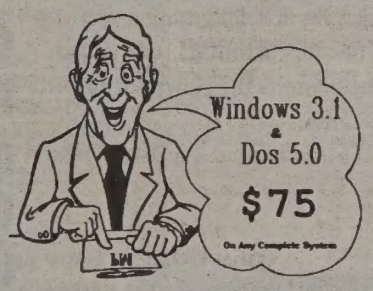

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- 486DX-33 EISA Mother Board
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• AT I/O (2Serials, Parallel, Game) Ports	16 Bit Ethernet Adapter
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• 14" SVGA Monitor w/1Mb Adapter	101 Enhanced Key Board
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• 101 Enhanced Keyboard	
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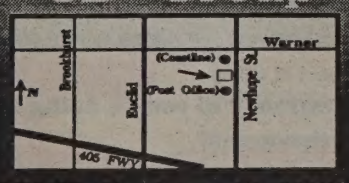

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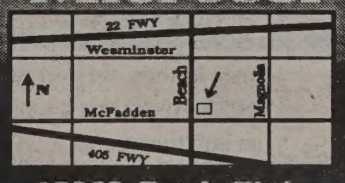

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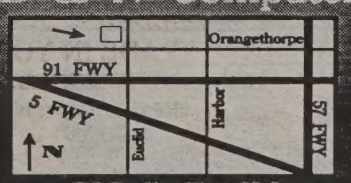

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Questions And Answers About OS/2

Real Questions, Official Answers, Real Answers (As I See Them, Anyway)

BY JOHN C. DVORAK

As a recent convert to OS/2, I've been downloading just about everything I can find concerning the new operating system. In the process I ran into this Questions and Answers file, posted as general OS/2 information on various electronic services. It's part of a question and answer session held by the company for the press and the OS/2 fanatics.

IBM has been criticized for its less than stunning marketing in the world of microcomputers. Of course, this is compared to Microsoft, one of the great marketing companies of all time.

Whatever the case, the company's Questions and Answers led me to imagine the McCarthy-Army Hearings of the 1950s, or even the Watergate hearings. The IBM responses to rather simple questions are pretty pathetic and wishy-washy. So I took the file and added the real answers (as I imagined them) after the official answer.

DVORAK'S LAST COLUMN

QUESTIONS & ANSWERS ABOUT OS/2

(Text released to the public on March 31, 1992)

© 1992 by John C. Dvorak. All rights reserved. *John C. Dvorak graduated from the University of California. He is a contributing editor of* PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

Question: Can I walk into a local software retailer today and purchase OS/2 2.0?
Official Answer: Our goal is to make OS/2 2.0 available everywhere DOS is available and will be widely available on dealer shelves toward the end of April. If a customer's remarketer does not yet have the product in stock, it will be available through an 800# where IBM is taking direct orders.
Real Answer: *No.*

Question: When will Windows 3.1 code be included in OS/2 2.0? Will you issue another release?
Official Answer: As you know, we have the intellectual property rights to Windows 3.1 code and are currently running that code in our lab. We will review the final functionality of Windows 3.1 and base any feature updates on what our customers require.
Real Answer: *We have no idea.*

Question: IBM has always said it will not sacrifice product quality to meet a delivery date. Is today's product of the highest possible quality, or is it a buggy product that has been released to meet your set delivery date?
Official Answer: OS/2 is at a superior quality level. We believe we are delivering a world-class product to our customers, one which for the first time exploits the power of 32-bit Intel-based systems.
Real Answer: *We don't know. We just hope it works.*

Question: How many copies of OS/2 2.0 do you expect to sell by year end '92?
Official Answer: Currently, we have more than one million OS/2 licenses and each of those users will receive a free upgrade to OS/2 2.0. We expect to sell numbers in the millions.
Real Answer: *We haven't got a clue.*

Question: How is IBM planning to measure the success of OS/2 2.0 in the short-term? Long-term?
Official Answer: We use profitability, marketing share, and customer satisfaction.
Real Answer: *What kind of stupid question is that? Get a job!*

Question: How soon will you have another version or release of OS/2?
Official Answer: We do not anticipate that a new version of OS/2 will be required for some time. Rather, we will continue to enhance OS/2 2.0 over time by providing regular product enhancements.
Real Answer: *We haven't got a clue.*

Question: IBM must have invested heavily in the development of OS/2 2.0. How much did you spend?
Official Answer: Development costs are proprietary. If you're responding to the *WSJ* article, $2.5 billion was grossly exaggerated.
Real Answer: *Like we're going to tell anyone? Give me a break.*

Question: Does IBM expect OS/2 2.0 to be a big revenue producer?
Official Answer: We believe OS/2 2.0 will be a success in the marketplace.
Real Answer: *Duh! No, we do this as a hobby!*

Question: How much are you spending altogether in advertising/ promotion?
Official Answer: Our promotional budget is proprietary. However, let me emphasize that we have established a far-reaching campaign. In fact, it will be one of our largest worldwide ad investments for an IBM product this year.
Real Answer: *We haven't got a clue.*

Question: Will you be doing any TV advertisements?
Official Answer: We have a hard-hitting print effort planned; however, we are certainly exploring additional media.
Real Answer: *What? Are you nuts?*

Question: How is IBM planning to measure the success of OS/2 2.0 in the short-term? Long-term?
Official Answer: We use profitability, marketing share, and customer satisfaction.
Real Answer: *What kind of stupid question is that? Get a job!*

Needless to say this goes on for days. I just wish they'd use my answers. ■

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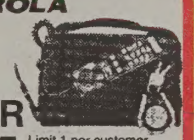

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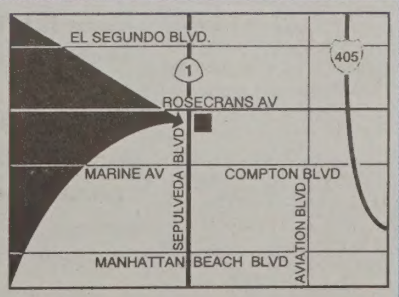

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> "It's nothing less than a dream come true"
> —*Steve Gibson InfoWorld 8/26/91*

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PC Week Ratings	All Charge 386 3.2	Netroom 2.10	QMAPS 2.0	386Max/ BlueMax 6.00	QEMM 6.01 Analyst's Choice	Memory Commander 2.1
Software Compatibility	●	●	◐	●	●	●
Hardware Compatibility	●	●	◐	●	●	●
Reliability	◐	●	◐	●	●	◐
Ease of Use	●	●	●	●	●	●
Memory Management Flexibility	●	●	●	●	●	●
Quality of Documentation	●	●	●	●	●	●

● GOOD ◐ SATISFACTORY ○ NEEDS IMPROVEMENT

PC Week rated QEMM 6 the best memory manager.

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INFO WORLD PRODUCT OF THE YEAR 1991

PC MAGAZINE EDITOR'S CHOICE
QEMM 6
February 11, 1992

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QEMM-386 v6 finds more high memory than any other memory manager. *Byte Magazine's* tests showed it produced net memory gains of 21K to 132K over DOS 5.0 alone, for instance.

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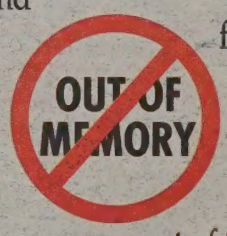

Not every PC can benefit from Stealth. But every PC can benefit from 'Squeeze'—our new feature to accommodate those TSRs that need more memory at start up and less when they're resident. Memory allocation is temporarily increased, then squeezed down after it's needed.

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Quarterdeck

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Key to comparison table: Software compatibility is defined as the product's ability to run without problems with the operating systems PC Week Labs used in testing, MS-DOS 5.0, IBM PC DOS 5.0 and Microsoft Windows 3.0, and with a variety of application software, including Quarterdeck's DESQview 2.40, Xerox Ventura Publisher 3.0 for DOS, WordPerfect 5.1 and Artisoft's LANtastic 4.0. Hardware compatibility is defined as the programs's ability to run on PC Week Lab's test hardware platform, which included a 33MHz 486-based PC and a 25MHz 386-based IBM PS/2 Model 70. Reliability ratings are based on the successful and dependable performance of each operating system and application-software package under each memory manager. Ease of use is based on ease of installing and configuring each program, based on support for automatic loading features and the intuitive narure of the interface. Flexibility in managing memory is rated on the range and quality of the product's features in optimizing system performance and handling special-case installation. Quality of documentation is judged by the clarity, comprehensiveness and helpfulness of the documentation provided with the product, based on the organization of the manuals as well as the thoroughness of definitions, directions and explanations, and the inclusion of troubleshooting information.

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